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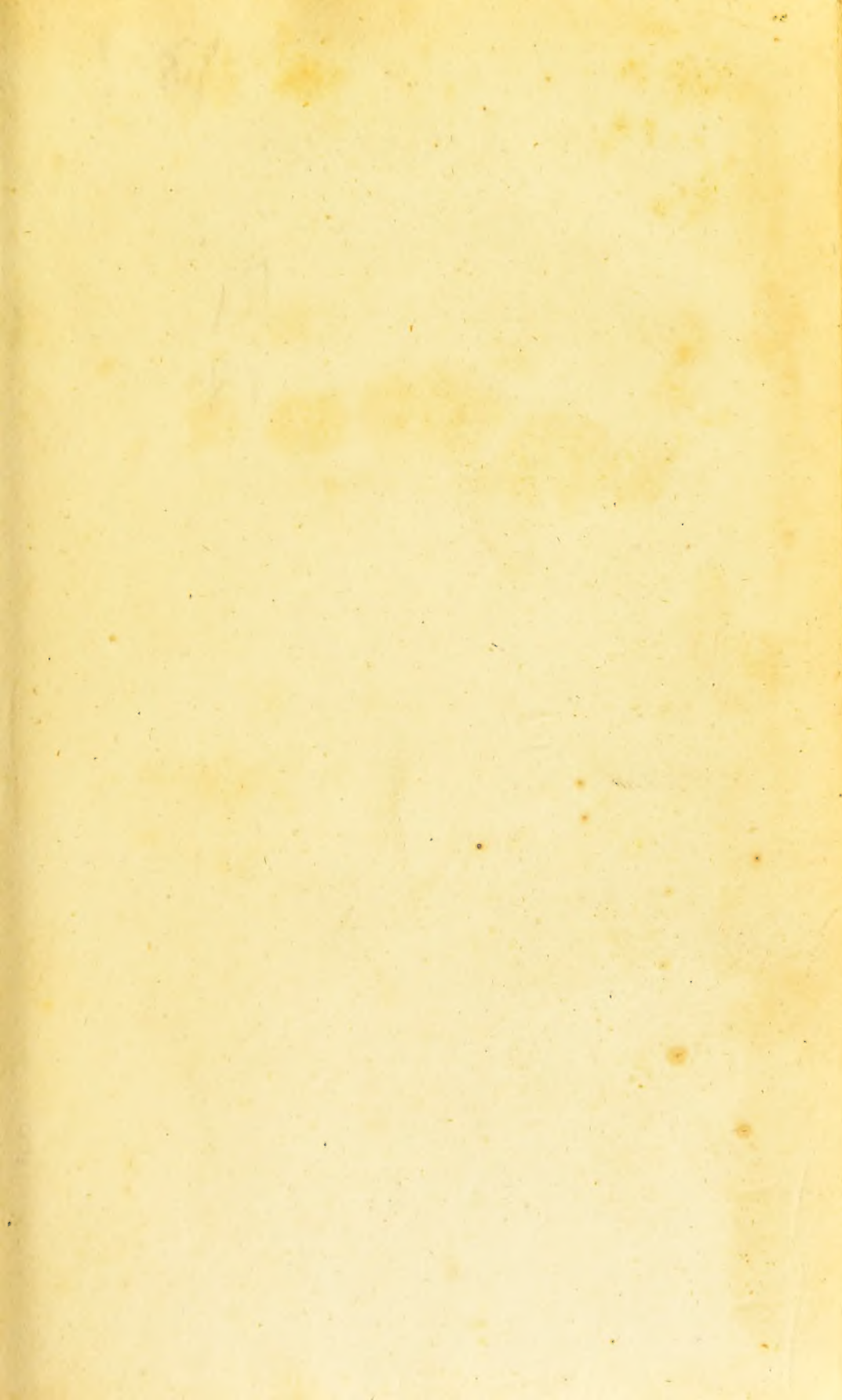
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PRACTICAL OBSERVATIONS

ON THE

OPERATION AND EFFECTS

OF CERTAIN

M E D I C I N E S

IN THE

PREVENTION AND CURE OF DISEASES

TO WHICH

EUROPEANS ARE SUBJECT IN HOT CLIMATES:

APPLICABLE ALSO TO THESE KINGDOMS.

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ON THE
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OF CERTAIN
M E D I C I N E S,
IN THE
PREVENTION AND CURE OF DISEASES
TO WHICH
EUROPEANS ARE SUBJECT IN HOT CLIMATES,
AND IN THESE KINGDOMS;
PARTICULARLY THOSE OF THE
LIVER, FLUX, AND YELLOW FEVER:
APPLICABLE ALSO TO THE
PREVENTION AND CURE
OF THE
S C U R V Y.

Written in a familiar Style.

RECOMMENDED TO THE PERUSAL OF EVERY PERSON
GOING TO SEA, AND RESIDING ABROAD.

TO WHICH ARE ADDED,

Plain Directions for private Use in the Absence of a Physician;

AND

Observations on the Diseases and Diet of Negroes.

WITH

A copious explanatory Index.

By R. SHANNON, M. D.

Surely there are no lives more valuable to the State, or have a better claim to its care, than those of the BRITISH SAILORS, to whom these kingdoms comparatively owe their riches, protection, and liberties.—When replete with health, what enterprise too dangerous, what achievement too great, for these brave fellows?

DR. LIND.

L O N D O N :

PRINTED FOR THE AUTHOR; AND SOLD BY VERNOR
AND HOOD, BIRCHIN LANE, CORNHILL.

1794.

28140

TO HIS GRACE
The Duke of RICHMOND, K.G. F.R.S.
MASTER OF THE ORDNANCE;
Lord A M H E R S T, K. B.
COMMANDER IN CHIEF;
The Right Hon. WILLIAM WINDHAM,
SECRETARY AT WAR;
The Earl of CHATHAM, K.G.
FIRST LORD OF THE ADMIRALTY;
THE RIGHT HONOURABLE THE OTHER
Lords Commissioners of the ADMIRALTY;
AND THE
Directors of the Honourable EAST INDIA
COMPANY:

THIS ATTEMPT
TO BENEFICIALLY CONTRIBUTE TO THE HEALTH
AND PRESERVATION OF THE
NAVY AND ARMY OF GREAT BRITAIN,
AND THE
SEA AND LAND FORCES OF THE
EAST INDIA COMPANY,
AND OF
ALL PERSONS WHO GO TO SEA, OR RESIDE ABROAD IN
HOT CLIMATES,
IS RESPECTFULLY INSCRIBED,
BY THEIR MOST HUMBLE SERVANT,

RICHARD SHANNON.

*Cleveland Row,
St. James's, 1794.*

P R E F A C E.

THE chief purpose of the study of Medicine is to acquire a knowledge of a safe and effectual method of curing diseases. The attainment of this end is intimately connected with the publick good. Every endeavour to promote it, therefore, may be considered as having some claim to a candid examination. Under this persuasion, I submit the following observations to publick inspection.*

In order to render this treatise as extensively useful to every class of readers as I could, particularly those for whom it was designed, the medical men of our fleets and armies,

* Dr. A. Duncan.

and

and all who navigate the seas, and visit or reside in warm latitudes, or hot climates, whether practitioners in physick or not; independent of what has fallen within my own observation and experience; I have consulted such authors as have written upon the subject, that were obtainable at the time. In so doing, choice has been made of what appeared to me most likely to promote the prevention and cure of diseases incident to Europeans in those climates.

In which, due regard has been paid to the improvements in medicine that are daily made, and the discoveries added to the common stock, comprehended within the limits of my present pursuit. Nor do I apprehend that I have gone out of my way, except stopping for a moment to recommend a mode of treatment, and a medicine, which I have reason to believe the best calculated to remove the *Hydrophobia*, in the *Rabies-canina*; a dreadful malady,

malady, from which, perhaps, no country is exempt. The early appearance of such a symptom has hitherto cut off all relief; to obviate which is my intention.

In all the diseases treated on, after setting down the symptoms, I have first stated, and without reserve, the method of prevention and cure, pretty exactly, though not very systematically, with the medicines in use; faithfully narrating every recommendation that each author (made use of; has thought proper, or from experience found necessary, to enforce.

Having in this manner done them strictly the justice intended by the author himself, as far as came within the sphere of my comprehension, I next proceed exactly to explain the operation and effects of my own remedies, in a manner, I trust, that will be found equally impartial; and their application and use exhibited in such forms, as seemed

to me best calculated to render them speedy in their operation, and beneficial in their effects; and in which they have happily succeeded, even beyond my own expectations.

In doing which, it will be found that I have not been unmindful of that useful class of people the *Negroes*; in which, not only the interest of the planter, but the feelings of humanity are concerned.

I should have thought I was to blame not to have availed myself of such authors as I have read, in a work, the subject of which is of so much importance to so large a part of the nations of Europe, especially the maritime states, or those most powerful in their fleets and armies, and most extensive in their commerce and foreign possessions. Those authors which I have not seen, I most sincerely regret; and shall not fail to profit by their labours on a future occasion. And it will, it is presumed, be readily allowed, that

I should

I should have been equally to blame, not to have enriched a work like this with such extracts as were found suitable to my subject, and calculated to promote so good a purpose.

Whatever I have borrowed from any gentleman's works, I have candidly acknowledged; and imagined I did them more justice, in giving it in their own words, than in risking the censure of mutilation, by giving it in my own. If I have omitted to name any one, who has given me the least assistance, I am sure it is unintentional; and shall, if it come to my knowledge, be rectified in any future edition this work may undergo.

One object, I hope, has never been lost sight of, the speediest method of relieving the patient by the most safe and powerful means. In the laying down which, I have simplified the manner, for the benefit of the patient and his friends about him, that no injury should result from delay in the absence of a medical

practitioner, to enable them, under such circumstances, to immediately administer relief with confidence. A matter of no small utility in diseases so rapid in their progress, and fatal in their effects; in those climates, where every thing that can be done, should be done immediately, or probably the patient may be lost.

The SCURVY, from its importance and prevalence in the scale of bodily infirmities, has occupied a large portion of the labour bestowed on this work; where, it is hoped, that in what I have gleaned up from others, or advanced from myself, the choice has not been injudicious, nor the positions ill-founded.

Although a subject, on which much has been written, it has not been exhausted. If I must acknowledge, that when I entered the field, I found much of the ground pre-occupied, I must at the same time confess, there was much more open to future investigation;
confe-

consequently there was not only room enough for my little tract, without trenching upon the opinions of others, but ample space for those that may follow.

Some opinions I have endeavoured to support; most I have given as I found them; both these, together with what I have advanced myself, are humbly submitted to the decision of the candid reader.

Where I have advanced any thing, which to some readers may wear the appearance of novelty, it has necessarily arisen out of the subject, and not from a wish to distinguish this treatise by such unprofitable means.

To have unnecessarily differed with many able and experienced authors, who have bestowed their labours on this subject, however it might have gratified an idle vanity, could have brought me but few respectable admirers; and, what is of infinitely more consequence, not have rendered the work more valuable.

My views have not been to excite admiration, but to extend relief in a disease, which Dr. Milman has judiciously stiled the *essence of debility*; by adding my mite to the common stock; by throwing some light, I hope, on the *medicines* in use; by shewing where they were defective; how they could be improved; and by what additions. Those I have shewn a disposition to introduce, I leave to stand or fall by their own merit.

The portable-whey, portable-lemonade, acid of tartar, and some others, rather articles of *regimen* than medicines, will, I flatter myself, not be ill received, as they bid fair to be useful additions to the surgeon's necessities.

Dr. Lind has been the *compass*, and the other authors the *chart*, by which I have shaped my course; in what has not fallen within my own observation, or resulted from professional knowledge and experience.

How far I have succeeded in my views, which have had for their object the prevention
and

and cure of the *Scurvy*, and *Diseases incident to Europeans in hot climates and on long voyages*, will be best understood by the liberal and candid practitioner; who best knows how and where to make proper allowances for the inaccuracies and imperfections of

THE AUTHOR.

*Cleveland Row,
St. James's, 1794.*

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INTRODUCTION.

THE modern laudable mode of prosecuting inquiries in natural philosophy, chemistry, and physic, uninfluenced by any authority, and biased by no theory; that has not stood the test of experience, has enriched medicine as well as the other sciences with many useful discoveries.

Yet a medicine, or medicines, that could be relied on, with any positive degree of certainty, in the prevention and cure of those diseases, so formidable in appearance to Europeans on long voyages, and in hot climates; and so dreadful in their effects as to deter many from risking the consequences; the well-known havock that they constantly make in our fleets and armies, has employed the pens and practice of many able
A practitioners,

practitioners, without that competent degree of success, reasonably to be expected.

It has long been a subject of medical enquiry among those who, from their enlarged scale of practice and situation, have been witnesses to the fatal effects of these diseases; and perhaps there are few subjects that have furnished the world with a greater number of laudable, well-intended plans, for the prevention and cure of these diseases, particularly the scurvy.

And some of these by men of genius, learning, and ability, who, from their situation on board ship, and at our hospitals at home and abroad, have been suffering witnesses to the frightful ravages and mortality of these diseases, more dreadful and destructive than the common enemy.

How painful and distressing must the situation of those men be, when they found themselves destitute of resource in medicine, to counteract the ravages of diseases, that hourly lessened the number of their companions and friends! who were often this day well, the next day ill, and the third day dead. The horror of the gigantic strides of irresistible disease, is easier to be conceived than described.

That

That this is often the case of Europeans, and in one or other of the tropical latitudes always the case, the melancholy page of well-authenticated history, and the miserable fate of friends and relations, prove much too true. Torn from the side of their companions, in spite of every effort of the able practitioner and that the most tutored skill and laboured ingenuity could suggest.

If the number of treatises written with a view to guard future navigators, merchants, travellers, and settlers, from the malignancy of such fatal diseases, were ten times as many, still it might be a matter of wonder that they were not infinitely more numerous; taking into consideration the magnitude of the object, and the utility annexed to it.

All that have fallen within our observation have added something to the common stock, and consequently deserve well of every commercial nation, and every nation formidable in their fleets and armies. And many of the gentlemen mentioned in the following pages, are ornaments to their profession, country, and science.

The highly improved *Materia Medica* of Euro-

pean nations, possess an infinity of useful drugs of undoubted efficacy. And perhaps no period of medical history can boast of such a number of able practitioners, more free from prejudice, or more open to conviction.

Many of these drugs, of the most powerful kind, in the ablest hands, have lately been the subject of medical enquiry; and their operations and effects impartially delineated. Those which we most approve are inserted here, without attachment to system, or bias to theory.

Those which are the result of our own research, such has been their success, and so much have they surpassed our expectations, that we often feel ourselves seized with paroxysms of partiality, when we are endeavouring at that description, which we at the moment, think is but barely doing them justice.

The great bulk, quantity, and long continuance of some; the uncertain, and sometimes violent, operations of others, of the powerful medicines in use, with many other inconveniencies that may in time be corrected, by the judicious management which at present prevails, joined to what we
have

have seen and felt for ourselves and companions in those climates, led us to investigations of this sort.

We could not possibly have so narrow an opinion of Nature's great plan ; we could not otherwise suppose but that its great author had made ample provision for the cure of every disease incident to the human frame, and endowed us with understanding to collect and find them out, among the great variety so liberally dispersed in the vegetable, animal, mineral, and marine kingdoms of nature—these exhaustless storehouses to which we have free access.

We are among the number who have, we hope, very laudably bestowed some labour in pursuit of the discovery of a medicine, or medicines, to counteract the malignancy of those depopulating maladies, that might, with a sufficient degree of certainty, answer the expectation of both physician and patient, in the prevention and cure of these diseases.

And if we are so happy as to find these medicines meet with the like success in other hands, that they have in ours, we may truly say without vanity, that we have at length succeeded in the

laudable wish, of discovering the use and application of medicines, that may very probably give many years of existence to great numbers of Europeans yet unborn; who, like their predecessors, might otherwise have fallen a prey to diseases, which were in a great degree hitherto unconquerable; and to Great Britain more invulnerable than her enemies.

If, by a specific, an infallible remedy is meant, we hope it cannot be collected from what we have yet said, that we consider our medicines, or any others that we have introduced into this treatise, intitled to that appellation. If their operation and effects, will but answer the important purpose of preventing and curing these formidable diseases, which we have not the least reason to doubt, the discovery will amply recompense our labours.

We have not in their exhibition met with any of the inconveniencies common to most other powerful medicines, usually employed in the same intention, which, independent of their bulk and quantity, and the necessity for their long continuance after a cure is performed, to prevent the danger of a relapse, too frequently leave abdominal

nal obstructions: all of which inconveniencies our medicines will be found totally free from. And this we are warranted to say from the experience of their good effects; some of which are enumerated by a variety of cases, to be given in the second part of this treatise.

Under these circumstances we have every reason to expect, that the world will derive great benefit from these medicines, when prudently administered in conformity to the method laid down. We should not have presumed to have made this observation, and many others that may follow, had we conceived ourselves writing to medical men only. But as we have all through endeavoured to have made ourselves understood by the patient also, we have adopted a language most likely to answer our purpose; these diseases often occurring in situations where at all times medical assistance cannot be had: and those that are most urgent in their symptoms, and sudden in their effects, that many might fall a sacrifice to the absence of a surgeon or a physician, was no plan chalked out for them, and those about them, to pursue for their immediate safety.

Although we are apprehensive that we may be thought to have said too much in favour of these medicines, we cannot help feeling that we could not have said much less ; knowing, from the fairest and most conclusive trials, that they may safely be depended on in diseases common to Europeans in hot climates, and equally successful in the prevention and cure of the scurvy at sea.

The medicines are so quick in their operations, and speedy in their effects, that even on this account, they seem calculated to counteract the rapid progress of these deleterious maladies.

It is hoped the judicious reader will pay that attention to these medicines which the importance of the subject demands, and not think of relinquishing them, under the notion that their action is not explained to his satisfaction. But, on reflecting how little it has been in the power of physicians and chemists, to satisfactorily account for, or explain on what principle the Peruvian bark operates so successfully, in so great a variety of diseases, although acquainted with its effects for these hundred and fifty years ; this should operate as an inducement to examine more particularly into their
nature,

nature, while they admire and profit by their effects ; which is the only clue we have to lead us at present.

As it could not but appear to me a subject worthy of the strictest enquiry, I have been led to consult several authors who have treated of these diseases ; and am happy to find that the mode of practice laid down by those of the most observation and experience, seemed continually aimed at eradicating those diseases by the combined effect of medicines, the efficacy of which is eminently united in those we here offer to the public ; yet, I am free to acknowledge, that, at the very moment they were endeavouring to reduce the number of medicines, all of which were supposed to be more or less useful, to a few of the best and most certain in their effects, and for that reason most to be depended on, they seemed to conclude with the hopeless observation, of what medicine can be found to counteract the continued influence of improper diet, air, and confinement. And although I must further acknowledge, that men at sea are out of their proper element ; and that those who have been habituated to breathe the
elastic

elastic air, and live in the bracing temperature of most European latitudes, when at sea, or in Africa, the West or East Indies, they will more or less, like exotic plants removed from their native soil and temperature, sicken at the change, and sometimes wither to the root, under the influence of improper nurture and a different atmosphere.

Still the motive would be laudable to palliate what we could not wholly counteract. And though there might be some cases so inveterate and sudden in their effects as not to yield to the efficacy of our medicines, yet if they could be relied on to relieve one out of ten, instead of nine-tenths of those who had taken them (which last is truly the case), they must be allowed to merit the attention of every practitioner in physic, who values the life of his patients, more than an adherence to the deep-rooted prejudices entertained against specific remedies.

The object of medicine is to relieve the sick, remove diseases, and restore health. The more expeditiously that is done, the less the constitution of the patient must be injured. If our medicines
perform

perform this in a few days, and in some cases in a few hours, with as much safety and effect as a successful course of medicine has usually hitherto done in a few months, or weeks, surely they deserve a fair trial, and without which it would be illiberal to condemn them.

Those dreadful disorders to which they are most applicable, admit but of too many desperate cases, in which, even a doubtful remedy is better than none. And if these practitioners in physic who are acquainted with the sudden and fatal effects of the acute malignant diseases enumerated here, especially in fleets and armies, will but admit the justness of this reasoning, and receive and administer with candour medicines that their own observations and experience will soon warrant the use of, they will be instrumental in saving the lives of thousands.

Without assuming any greater pretensions to candour and disinterestedness, than the rest of our profession, we confess we have not been wholly free from prejudice against medicines introduced as specifics ourselves. But as it is not the business of a chemist to be led by names, nor influenced by
mere

mere appearances, after having submitted them to the test of that infallible touchstone—experiment, we have always given them the credit we found they deserved, and occasionally recommended them where we thought them useful, without ever knowing any thing of their authors.

Although the majority of the medical hands into which this paper may fall, cannot be supposed to stand in need of the description of the symptoms preceding each disease to which our medicines are applicable, yet to the younger class of those gentlemen, in the early career of their practice, they may not be altogether unacceptable. And something being due to an intelligent patient, and to his friends, where these medicines may make their way; and in situations where medical assistance may not be at hand, has induced us to lay the symptoms down rather fuller than the extent of so small a treatise would otherwise admit, the better to enable them to judge of the quality and nature of the disease they were about to remove.

Health is so great a blessing that every attempt directed towards its preservation, must at least deserve

serve some small share of public approbation. The air we breathe has a great influence on our bodies. It is well known that we can exist much longer without food than without air; and the salubrious quality of this element tends greatly to the well-being of the human frame; it is therefore of the utmost consequence, in all our investigations of diseases, to enquire very minutely into the state of the atmosphere we breathe. Besides its sensible qualities, heat and cold, moisture and dryness, it is well known to contain vegetable and animal, saline and mineral, substances, which it holds in solution. Modern discoveries have thrown great light on this subject not necessary to enlarge on for the present.

Bad air has a great influence on the stomach and intestines; it generally occasions a loathing and indigestion, with an aversion to food; together with frequent bilious stools: those who seem to be otherwise in good health become of a yellow complexion: excess in eating or drinking seem much more pernicious to the constitution in impure air: gross eating, a surfeit of fruit, undue mixtures in the stomach; such as of flesh, fish, and
fruits,

fruits, taken in at one meal; in those climates particularly where bad air is rendered still worse by heat, will usually bring on a cholera-morbus, or violent dysentery.

The bad air on board ships, arising from heat and moisture, the number of men impacted together in a confined small space on board ships of war and transports, in which the men sleep, and breathe an atmosphere of the perspirable matter of each other, blended with the bad foul air of the ship, loaded with other noxious exhalations, from the bilge water and contents of the ship's hold, and the effluvia of the sick, are sufficient causes for the scurvy and putrid malignant fevers, commonly on board ships at sea,* independent of the indigestible unassimilable food, and the putrid drink of a sailor, which, no doubt, largely contribute to these diseases.

That the scurvy, and putrid malignant fevers should derive their origin from such fomes of corruption floating in the incumbent air, may be easily conceived; that the lungs should be injured from their continual contact with such an in-

* See Scurvy, p.

elastic foul air, and a degeneracy of the whole mass of circulating fluids take place from absorption, and a relaxation and debility of the solids induced from air passing to and fro, through the pulmonary vessels, replete with such noxious particles, must necessarily be inferred, and is justified by facts too well known to require any proof.

The medicines here proposed are not of a nature to sweeten and correct bad air, and make it fitter for respiration, which no doubt is obtainable by other means: their qualities are to correct and counteract the morbid impression made on the animal system from breathing a foul putrid air; and moderate, but not extinguishing the septic ferment unavoidably increased beyond due bounds in the animal œconomy, by such morbid impression.

To correct the laxity of the solids and the acrimony of the fluids, continually under the impression of such predisposing causes of disease; and preserve the sanative qualities of the bile; which fluid, it is presumed, is the main source of health, and genuine medicine of nature, is the leading object of the medicines proposed.

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The action of every medicine, and consequently the circumstances claiming attention in its employment, are considerably varied by peculiarities in the habit in which it is given. What in this respect, therefore, is chiefly to be attended to in the use of our medicines, shall be briefly enumerated.

Few medicines from which any considerable advantages can be obtained in the cure of diseases, are of such a nature that they can, in every circumstance, be exhibited without inconveniency. On the contrary, the greater activity any medicine possesses, the more reason there is to apprehend disagreeable accidents from its being improperly used. When active medicines are therefore employed, it becomes, in every case, an object of particular attention, while we endeavour to obtain all the good effects, which may be derived from them, to avoid the bad consequences, if any, which they are most liable to induce.

These ends are to be obtained only by careful attention to many circumstances. Stimulants are much more inconvenient in irritable habits, than they are in plethoric ones; or in those in whom
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the force of the circulating fluids is very great. On this account, with patients in the vigour of life, evacuation may be sometimes requisite previous to the use of our medicines.

Some constitutions are affected by them, with very great ease, whether as acting on the alimentary canal or as entering the system, and exerting their effects there.

In cases therefore where the constitution of the patient is not previously known, these medicines are to be administered in the mildest forms, and to be begun with in the smallest doses hereafter prescribed; or in smaller, if thought necessary. When this precaution is used, they may be gradually increased to the full extent of the largest doses prescribed, and as much beyond them as the virulence of the disease may, in the judgment of the physician, be found expedient; and, in this manner, given with the utmost safety to the patient; and, when they have effected a cure, or a crisis, they may, with equal safety and certainty of success, be joined to the bark, decoction of the woods, or other tonic medicines, in re-establishing the health and strength of the patient. In some cases, to gradually diminish the dose

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after the cure may be preferable to abruptly leaving off the medicine.

The principal thing necessary being to proceed with caution, and not to surcharge the system with an unnecessary quantity of medicines, by which the patient may be exposed to the inconveniencies which, in a greater or less degree, accompany a too much increased secretion. In this manner of administering these medicines, the change produced in the morbid symptoms will always be a sure guide.

There are few medicines, with regard to the operation, of which all practitioners are agreed. By a knowledge of the manner in which a medicine operates in curing a disease, we can alone be enabled to accommodate its use to particular circumstances. He therefore who knows not only that a certain remedy will cure a particular disease, but is likewise acquainted with the manner in which it acts, in producing that effect, has at least a double advantage.

The action of our medicines is sometimes exerted on the stomach; when this is the case, the morbid matter is either expelled upwards or downwards, and not unfrequently makes use of both

both outlets, which may be encouraged as the case indicates. When the stomach and bowels are cleansed out, they chiefly operate by perspiration and urine. They often have a soporific, as well as a sudorific effect, and by the rest they procure greatly relieve the patient. Their anodyne, anti-inflammatory effects allay painful symptoms, and render them useful in cholic and painful diseases; and their restrictive, gentle, stimulant, antiseptic properties, make them beneficial in the scurvy and putrid bilious fevers.

From their various modes of operation and application, it may be readily concluded, that those medicines are powerful remedies in the cure of many more diseases: particularly when it is known that those diseases are not unfrequently removed without any sensible evacuation, as if they acted by a specific anti-acrid power. When potently diaphoretic there is usually a nausea; and when they exert their influence on the urinary organs of secretion, the discharge is generally copious, and frequently critical.

When we first administered these medicines it was our custom to premise an evacuant previous to their use, under a notion, that they would,

from their composition, have an undoubted tendency to bind the belly: and also, that a gentle vomit or purge was necessary to clear the alimentary canal, to give room to their more free and immediate exertion and entrance into the system.

The violence of the symptoms common to a cholera morbus forbids the use of evacuants: hence most physicians, *in warm climates*, where this disease is most frequent, have found it necessary to remove the urgent symptoms as speedily as possible. For this purpose they administer opium in form of thebaic tincture, from twenty to eighty drops, at the first attack of the disease; and the good effect of this treatment has now rendered it very general.

We soon found that evacuants need not necessarily precede the use of our medicines, except under the before-mentioned circumstances of plethora, from their general tendency to act in the acrid, putrid, bilious fordes, or any other offensive matter lodged in the alimentary canal, and to remove it either upwards or downwards; consequently could have no idea of their beneficial qualities in a cholera morbus, until their being given by mistake in that disease had discovered it.

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From this we were led to give them in the cholic, and found them to prevent the ileus and inflammation, by relieving the spasm. We found them equally efficacious in diarrhœa and dysentery, where they were administered copiously, without the intervention of evacuants. Although the diarrhœa were of the worst sort, and of very long standing, and the dysenteries accompanied with malignant symptoms, they quickly overcame the fomes of the disease. And in those that had proceeded from obstructed perspiration, they very remarkably diverted the flow of humours to the skin, by abating the irritation, and, as we presume, contracting the mouths of the vessels which empty their contents into the intestinal canal, in the diarrhœa; and in the dysentery, by healing the erosions of the blood vessels excoriated by the flux of acrid humours: and, lastly, by their disposition to strengthen the habit.

The tenesmus, or constant inclination to go to stool, with the tormina, readily yielded to the powders inviscated by a strong jelly of starch, and made up into a clyster.

In the bilious, marsh, yellow, Bengal, African, and West-India fever, remitting or intermitting;

raging in camp, hospital, ship, or prison; whether accompanied with a diseased spleen, or swelled, inflamed, or diseased liver, or not.

In these kinds of fever no time is to be lost; whatever is to be done should be done immediately, and in the beginning: every mitigated period should be watched with the closest attention, and not a moment neglected in which proper medicines may be given to secure a complete though short remission.

If we mean to make a sudden and effectual stimulous of all the organs of evacuation, our medicines must be given in an increased dose every repetition, which should be proportionally frequent, as the urgency of the symptoms seem to require

The stomach and bowels will be soon divested of their morbid contents, and the action of the medicine directed to the surface of the body and the urinary organs of secretion, and in general, an equable sweat, rest, and a remission; the head relieved, and the pain and spasm taken off.

The sudden relief of such troublesome threatening symptoms, succeeded by refreshing sleep, increases and strengthens the powers of nature to struggle

struggle with and overcome the succeeding paroxysms; and not unfrequently in the first instance induces a salutary crisis, and removes the fever.

The benefits derived in general from those potent remedies are to counteract, extinguish, or expel the acrimony or fomes of the disease, frequently without any sensible evacuation, and commonly by a gentle diffusive stimulus free from irritation, accompanied with a soft exhilarating glow, spreading from the stomach through the whole system, exciting a refreshing diaphoresis, that brings on a remission or crisis of the disease. And sometimes evacuating by vomit, or by stool and urine; and at other times by a sensible increase of all the animal secretions, except those of the salival glands, which they rarely affect, but are always salutary when they do; except when a scorbutic virus reigns. Previous to their removing spasms of the worst kind, they sometimes effect the salival glands: in such cases this symptom indicates approaching relief. Their more general operation is an increase of the alvine, urinary, and cuticular excretions. Their not being of a nature to be neutralized or otherwise decomposed in the first passages, they have a fairer chance; and by

their operation and effects, it is evident they do assimilate with the fluids and pass into the system undecomposed.

In painful, foul, spreading ulcers of long standing, with thick edges, large funguses, and an ichorous discharge, that had rather been aggravated than relieved by a course of mercury; and that had from their irritation and constant drain, worn out and emaciated the patient to the lowest ebb, the effect of those medicines were truly wonderful in calming the morbid irritability, procuring ease and rest, and producing a salutary change in the ulcers. In many cases of this nature their effects were immediate; in others more gradual, and, in most that fell within our observation, certain.

From their anti-inflammatory effect these medicines appear to be specifics in the synochia or inflammatory fever; and though it should then seem that they could not but be hurtful in the typhus-nervosus, or low nervous fever; yet the contrary is founded on experience, they proving successful in synochia, typhus-nervosus, and typhus-putridus, or petechialis; so that they have turned out to possess, in a very eminent degree, the opposite, though very desirable and highly salutary

tary qualities of curing *debile*, anti-inflammatory, and also *febrile* inflammatory diseases. Effects similar to this are attributed to opium, by Dr. Cullen in his "Materia Medica," who observes, that opium may be given as a stimulant in typhus fevers, because the *vis vitæ* is very low; but when the remissions are distinct, it should then be administered as a sedative. If I dared venture to carry the theory of this great man any farther, I would say the same of all stimulants; that is, when applied to our bodies in any considerable degree, they become sedative, and all sedatives, in a low degree, may be considered stimulants.

Their extraordinary effects on the nervous system, of which we have not had sufficient experience to fully understand, could alone be sufficient to recommend them to general use in all spasmodic affections.

The recent and accurate trials made by an able practitioner* upon antispasmodic remedies, to form a scale of their relative value, or efficacy in this very interesting branch of the art of healing, serve to shew, that too much reliance

* *Francis Home*, M. D. Professor of Materia Medica in the University of Edinburgh.

should not be placed in the present antispasmodics in use, and should put us upon the research after others of greater efficacy and more general application in these diseases.

Till better are found out and applied, we beg leave to recommend to the candour and liberality of practitioners in physic our medicines, which, as far as they have been tried, have turned out to be antispasmodics less exceptionable and more generally useful than those at present in use; and which have been fully investigated by the unquestionable abilities and great opportunities that have fallen to the lot of the gentleman before alluded to. The conclusions which he has drawn from the trials made on a great number of patients, are here transcribed in his own words:—

It is but a melancholy retrospect to view so many trials made with the most approved antispasmodics, and to see so few cures performed by any one particular remedy. We see there is none in which we can always trust, but must vary our medicines, as a new one will often succeed when others have before failed. This uncertainty of antispasmodics depends not perhaps so much on
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the stubborn nature of such diseases, or on the weakness of the remedies, as on the want of accurate experiments, with all their circumstances. This has been a great defect in the *Materia Medica*, has stopped the progress of medicine, and kept it in a state of uncertainty; whereas, if the circumstances of the disease, and of the exhibition of the remedy, had been handed down, certain and fixed general principles and rules must, ere this time, have taken place. To supply this defect, and point out a proper line for the improvement of medicine, I have collected the proceeding experiment.

Antispasmodics are not all entitled to equal confidence. I know no author, however, who has settled their comparative merit; each physician is left to judge from his own experience; but in private practice, he may grow old without facts sufficient. Were I, from the proceeding experiments, which are not a few, to make a computation of their relative value, I would arrange them into four classes, according to their powers. In the first, I would place the weakest, as the *folia aurantiorum*, the *flores cardaminis*, the *artimisia*, the *peonia*, the *viscus queroinus*, the extract of
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the hyocyamus, castor, musk, the cuprum ammoniacale, and electricity. In the second, fear, camphire, the flowers of zinc, and blisters. In the third, asafœtida, æther, and mercury. In the fourth, bark, opium, and bleeding. Every one in this distribution, will judge as he has experienced. I may alter my opinion on further trials, as it is from these I have formed the present. It is good however to have some fixed, and it is easier afterwards to correct, than to settle at first, such a comparative view.

One of the chief designs of these experiments was to discover the cases and situations in which such medicines might be most successfully used. In this we have not been altogether unsuccessful. We may observe, that most of these, besides their primary antispasmodic quality, possess secondary qualities, which have much influence on their effects and exhibition. Besides some of them possessing laxative or sudorific powers, which others do not, they may be distinguished into the stimulant or inflammatory, and the sedative or anti-inflammatory. Of the former sort, are electricity, mercury, valerian, asafœtida, Peruvian bark, opium, &c. Of the latter, are bleeding, epispastics,

tics, musk, camphire, castor, æther, the floris cardaminis, the folia aurantiorum, the cuprum ammoniacale, the flowers of zinc, &c. The former must be chiefly useful in the debile anti-inflammatory states; the latter in the febrile and inflammatory. The preceding experiments have confirmed this, and bleeding has been found one of the most powerful anti-hysterics, when the habit of the body was inflammatory.

But particular antispasmodics are suited to cure particular spasmodic diseases, from some other circumstances, independent of these just now mentioned. These experiments have shewn me the fact; but they have not discovered the cause or principles on which it depends. Æther will relieve one spasmodic disease and not another, though both inflammatory. The flowers of zinc will cure an epilepsy, though not a convulsio.

Opium will ease an asthma, though not a convulsio. Mercury will cure a trismus, or spasmodic gulæ, though not an hysteria, convulsio, or asthma. As there are topical spasmodic stimuli, it is probable that there are topical anti-spasmodics which relieve the irritation or irritability of certain parts only. But how they act is difficult to say.

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We have hinted at the principle in mercury, though we own it is but an opinion. In the other antispasmodics, I can form no idea that satisfies me. As the operation of such bodies is exerted on the nervous system, of which we know so little, we may never, perhaps, be able to fix their mode of operation. We may however, by a multiplicity of experiments, be able to fix the facts, and the diseases and circumstances to which particular anti-spasmodics are best adapted; which would be of essential service in the practice of medicine.

These observations, founded on such well directed experiments, must convince us of the necessity of introducing a spasmodic remedy, more extensively, useful, and certain in its operation than those commonly used. The fatal effects of the *locked-jaw*, so frequently occurring in warm latitudes, on amputations, and wounded nerves, and on board ships of war, and at naval and military hospitals, entitle every medicine of superior efficacy to a full and fair trial, until medicines are discovered that may, with some greater degree of certainty, answer in the prevention and cure of those depopulating maladies, which we are convinced must ensure ample reception among all nations,

nations, to those here proposed; particularly those nations most powerful in their fleets and armies, and most extensive in their commerce, and foreign possessions, who are proportionably exposed to a greater loss of valuable lives, from the ravages made in their fleets and camps, by the epidemical diseases common to those situations, than from the horrors, havock, and calamities of war. And from the scurvy, bilious, and putrid fevers, which rage in long voyages, and hot climates, to which Europeans are also exposed, whether destined for commerce, conquest, or settlement, in a much greater degree than from the united efforts of the common enemy.

Without absolutely deciding, whether the scurvy is a putrid disease or not, or reasoning upon the antiscorbutic qualities of our medicines, or their mode of operation, when they have entered the system, and how they may be supposed to perform the cure of this disease, when they have arrived there, which is very uncertain in fact, and leads to still more uncertain reasoning, we shall pass on to what is of more importance in a concise treatise like this, written to explain the action and effects

effects of medicines; the introducing of which to general practice, in the cure of the scurvy at sea, and in hot climates, as well as the other diseases already enumerated, in which they have been also recommended, is a primary object.

Nor should it be expected that we should enter into the description, use, application, and success of the numerous medicines, that have been prescribed for the cure of the scurvy, and succeed each other with the fashion and theory of the times they were brought forward and exhibited in; much less should it be expected that we should condemn them to make way for the more general use of our own medicines; which we wish to stand or fall entirely upon their own merit.

So far from that, there are many of them we have a very high opinion of, and have the good of the patient so much more at heart, than the more successful of our medicines, that we wish to combine them with the use of our own in all cases where they may be thought admissible, as will be found in the practicable part of this little book; without the most distant intention of disallowing their efficacy, or attributing the sole cure of the disease

disease to our medicines, when the credit ought to be shared with them.

Among those most to be depended on are acids: every one almost is acquainted with them; the sensation that they excite is upon the recollection of every palate, and perceptible upon the organs of taste, in a great part of our food, and a much greater part of our drink; therefore, we shall not enter into a particular definition of them here*.

It is to be found in the vessels of every plant, and probably in the stomach of every animal. It is well known to chemists and physicians to be an inhabitant not only of the vegetable, animal, and mineral kingdoms, but likewise of the atmosphere; and perhaps is no less useful than universal.

The progress of modern improvements in chemistry has been so great, that, from vital or dephlogisticated air, united with inflammable air, all the various acids of vegetables are supposed to be producible; but it is not our intention to insist on

* See acids, p.

this here. They correct the bile, neutralize alkalies, check putrefaction, allay heat, and quench thirst; and may be so managed as to promote the fluid secretions, and correct the laxity of the solids, in a considerable degree.

DISEASES IN HOT CLIMATES.

FEVERS.

Particular Observations on the Bile.

WE shall, in the course of this treatise, enumerate so many particulars of opium, and some other powerful drugs; the operation and effects of which have so great an affinity with some of the qualities of our powders, that so far as the powers of opium and those drugs exert a salutary influence on the animal œconomy, they, in a moderate degree, preserve a similarity of effect and appearance in their operation with those powders which immediately ends, when we come to consider and sum up the inconveniences that follow the frequent and extensive use of these powerful drugs; therefore, we will enumerate some of the most striking of them under this head.

The same may be said of some of the principal

and least active of the preparations of antimony, mercury, steel, flowers of zinc, bark, musk, camphor, sudative salt of borax, alkalies, acids, &c. &c. &c.

We have been under the necessity of drawing conclusions in favour of our powders, in the necessary direction for their use and application; which, to those to whom it may appear to wear the garb of partiality, it is recommended to compare their efficacy in curing these diseases, in the course of their practice, with the medicines that have been already employed in those intentions.

And as the same observations will apply to most sudatives, antiseptics, diaphoretics, antispasmodics, eccoprotics, and antiscorbutic bitter and astringent medicines, the like trial will be equally applicable to them; which, we have no doubt, will remove the deepest rooted prejudices that could possibly be entertained against our medicines.

In the progress of such useful and experimental trials, the unparalleled utility of our medicines, in their operation and effects on that universal corrector and regulating standard of health, in the animal system, the *bile*, will more and more manifest itself, in correcting the qualities, moderating the redundance, and supplying the deficiency of the bile; which will be a much better eulogium on
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our medicines than any thing we could advance in their behalf.

The usefulness and necessity of the bile, for the preservation of life and health, are sufficiently known to every one who is acquainted with the rational and solid principles of physic. Its being found in every the minutest animal is sufficient proof of this; for there is not a possibility of finding, in the whole extent of Nature, a single insect destitute of a bilious humour; and indeed the bile lodged in the body of animals is a real and genuine medicine, wisely elaborated by unerring Nature, for preventing diseases, destroying their causes, and correcting the faults and disorders of the constitution; and, by means of its incomparable virtues and energy, animals are kept alive, and preserved in an easy and comfortable state of health.

Since the bile is so highly useful and efficacious in maintaining a state of health in the body, and proving, as it were, a natural and universal medicine, it must of course follow, that when this liquor is rather faulty with regard to its quantity, or depraved by a recess from its due temperature and crassis, a sure and unavoidable foundation for diseases must be laid: since then many, and these too formidable disorders, derive their origin from some fault of the bile, the principal virtue and

energy of medicines employed in curing them, ought to consist in correcting this fluid, when pecant in quality, generating it when defective, or evacuating it when abundant in quantity : for, as the bile, when in its due state, is justly to be accounted a fine and genuine medicine to the body, so we must readily grant that the most important of all other medicines are such as are calculated for reducing this fluid to a natural and temperate state.

The uses of the bile is to attenuate the chyle, to blend the oliogenous parts of the blood with the aqueous, to stimulate the intestines ; and, in part, change the acid of the chyle, and render it fitter to be assimilated with the blood. All these effects the cystic-bile produces in a greater, and the hepatic in a lesser, degree.

The bile is a fluid of great importance with regard to the good or ill habit of the animal. We have already seen here it operates upon the chyle and blood ; to which we may add, that it likewise assists in digestion, by acting as a ferment, and promoting the animal scepatic process.

A redundance of bile occasions many terrible diseases, which, according to the seat of the humours, their acrimony or vent given to them, will appear in the shape of a remitting or intermitting fever, a cholera morbus, or dysentery.

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Too great an evacuation of bile, either upwards or downwards, robs the chylication of its main instrument. Hence it prevents digestion, secretion, excretion of the fæces, and produces an acid temperature, coldness, weakness, paleness, and swoonings. If the bile be prevented in its discharge into the intestines, it produces a jaundice.

* What do we generally mean by a bilious temperament? Is it that original conformation which disposes one person to be greatly moved by causes that do not much affect another? This temper is certainly more prone to the passions, which are naturally attended with an excessive secretion of bile.

The source of sensibility, that fundamental part of the animal machine, is liable to very different conditions. It is influenced in a particular manner by heat and by cold; and this alteration, which it receives from climate, seems to be founded, in a great measure, on the diversity of temperament and character which we discover in different nations.

The national character may certainly be altered extremely by moral causes, but the original

* Maclurg on the Bile.

strong lines will always remain. When Livy speaks of the inhabitants of Gaul, and of Spain, they are distinguished by that very opposition of character, which has been remarked in them ever since. The same seriousness, solemnity, and steadiness on the one hand—the same levity, fickleness, and impetuosity on the other.

There is in one state of this power in which the life of the animal is raised only a degree of that above vegetable: it is the effect of excessive cold, and happens to those animals which, in the northern climates, sleep during the winter.

If we may credit the accounts of them, they continue sometimes six or seven months in a state of torpor; the slow and feeble motion of the heart alone discovering some remains of life; and, during all this time, they take in no kind of aliment, and seem to have no sort of excretion.

The sceptic animal process is so weak that their fluids do not suffer the ordinary degeneracy; and, consequently, they neither require to be recruited by fresh aliment nor to have their most altered parts separated.

The men who inhabit these climates are able, by certain precautions, to preserve constantly the heat of their bodies at the ordinary standard. Yet this does not prevent the cold from having certain effects upon them, both in diminishing their irritability,

bility, and in retarding, in some degree, the sceptic animal process.

It has been observed, that their pulse is much slower than that of the natives of a hot climate; so that, in comparison, the latter may be said to be in a constant fever. And it is well known, that the severity of their sky denying them vegetables, they use a very putrescent diet, consisting chiefly of fish, and yet are not subject to the *scurvy*, or any other putrid disease.

This constitution may shew that which is exquisitely bilious, as it were by contrast, for it is opposite. Here the irritability is augmented beyond the proper standard, the pulse is quicker, and the progress of the sceptic animal process, to which the bile owes its origin, is too much accelerated.—As the former arises from the effect of great cold on the constitution, this is naturally produced by excessive heat; and the bilious temperament is the common one in a warm climate.

But other causes, which affect the system in a similar manner, may have a tendency to induce this constitution. Such are, probably, a great and continued agitation of mind, either from the passions, business, or study; excessive and irregular muscular motion; a diet too stimulating, and without a just preparation of vegetables; the abuse of warm liquors; a too constant confinement to the hot
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and close air of a chamber, &c.; the residing in a large and populous city.

The bilious constitution seems not to be natural to this climate, where the temper of the people is as distant from the torpid strength of the inhabitants of the north, as from the too delicate and sensible habit of the southern nations.

Their moderate irritability, joined with a sufficient share of vigour, is connected with that state of the powers of circulation, in which red blood seems to be formed faster than it degenerates. Hence their full and sanguine habits; so that an Englishman may generally be distinguished from the southern people by the *purpureum lumen* which shines upon his countenance.

Yet we frequently see this sanguine plethora exchanged for a bilious one, in consequence of an alteration which the constitution suffers from a hot climate. Perhaps a similar change may be induced by other causes which I mentioned; to some, or all of which, the people, who, in this country complain most of a redundancy of bile, are generally subject.

We acknowledge that we are exceedingly ignorant of the manner in which the fluids are changed in digestion, circulation, or secretion; for we are acquainted with no analogous process that can produce the same effects.

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There must always then be something obscure and unsatisfactory in our idea of these operations. With respect to the redundancy of the bile, we only know, that in hot climates, where it is most remarkable, and as it were, universal, it is connected with a greater irritability in the nervous system, a quicker circulation, and a greater tendency in the fluids to putrefaction.

And the first of these affections seems to be that which is fundamental; for, if it be true that the animal body preserves constantly the same temperature, in various conditions of the atmosphere, its fluids may be considered as exposed always to the same degree of warmth.

The external heat, in this case, can only affect the body as a sensible and irritable machine; and its other effects must depend upon the change produced in the nervous system. And we find that when this system is affected in a similar manner, that is, excited in an extraordinary degree by other causes, the circulation and the septic animal process are both accelerated.

In consequence of violent passion, of excessive muscular motion, of strong convulsions, in several instances, quoted by Dr. Haller, a great tendency to putrefaction seemed to have been very suddenly induced.

On the other hand, in the case of torpor and
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low excitement of this system, the sceptic animal process seems to proceed more slowly than ordinary. It is remarked by Dr. Haller, that all the wonderful accounts of people who had lived a long time without taking in any aliment, relate to persons whose irritability was considerably impaired: they were either melancholy, foolish, stupid, lethargic, or insensible, from some evident injury of the nerves.

The excretions of the bile are as much appendages to the alimentary canal as the liver; and, being intimately connected with the former organ by their function, are so constituted by nature as to sympathize with its different states.

A nausea, by whatever cause excited, the action of emetic or purgative, seems to be always attended with a temporary increase of the biliary discharge. But these agents are so far from producing the constitution we are speaking of, that they are to be reckoned at least among the palliative remedies.

Yet, as a redundancy of bile is generally connected with a disordered state of the alimentary canal, it may be doubted whether this is not always the primary affection and cause of the former. The agreement, however, of so many facts, tending to show that this state of the secretion is frequently the effect of a certain disposition of the circulating fluids, renders it equally probable that
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the redundancy of bile is often the primary affection; and by the provision of nature excites that nausea which conduces to its evacuation.

Practical Observations in the Prevention and Cure of Diseases to which Europeans are subject in Hot Climates—General Observations on Fevers, &c.

THE most simple definition of a fever is, that it is an increased velocity of the circulation of the blood, without any remarkable diseased condition of the fluids or the solids of the body; arising merely from the increased action of the solids on the fluids, and subsiding on the cessation of motion or violent exercise; and, taken more extensively, may be properly defined an indisposition of the body, commonly attended with an increase of heat and thirst, and often with an headache; more frequently with a very distinguishable quickness of the pulse; or at least a great change from its natural state: and, for the most part, with various other symptoms of distress, which in a few days terminate in a recovery, a remission, or death.

Fevers may, with propriety, be classed into intermitting, remitting, and continual. An intermitting fever leaves the patient free from all symptoms of the disease, during its absence or remission. A remitting fever has irregular or imperfect intermissions. A continual fever has not any perceptible intermission.

Each of these fevers, whether intermitting, remitting, or continual, may be either attended with the usual and gentle symptoms, or they may be accompanied with violent, dangerous, and fatal symptoms, and hence be denominated malignant.

In all these three kinds of fevers, if the bile, either pure or mixed, be copiously or frequently evacuated by vomit or stool, the fever is said to be bilious; and there is sometimes a pain attendant on that evacuation felt on the seat of the liver.

A yellow colour of the skin is observed not only in common bilious, but frequently also in other fevers: sometimes denoting, as in contagious fevers, their malignant nature; at other times, as in some West India fevers, an universal dissolution of the blood and humours; and frequently accompanying gentle discharges of bile and a diseased liver.

Every fever is a struggle of Nature to relieve herself from something oppressive; therefore, we should

should always assist her endeavours by the most proper means that reason and experience suggest. And though we should be very cautious *in these kingdoms*, in the beginning, especially how we proceed in spurring on or bridling her efforts, till we have well considered the nature, quantity, and quality of the disease, and the constitution of the patient; yet, *at sea*, and *in those hot climates*, where fevers so soon can degenerate into putrid or malignant, no time is to be lost, *for whatever is done, should be done immediately, and in the beginning*, where fevers are so rapid in their progress and fatal in their effects: when the incumbent air at some seasons is so loaded with putrescent matter, and the habit, from inhaling and absorbing its noxious particles, so disposed to putrefaction, that a slight scratch in some becomes a spreading ulcer.

The general Mode of exhibiting the Antifebrile Medicines, with particular Observations on Fevers.

IN every fever the pulse becomes quicker than natural, and the functions of the body more or less impaired or vitiated.

The

The causes of fevers then will be such as by their irritation can quicken the circulation and excite spasmodic contractions in the several parts of the body. And,

These we may distinguish in a twofold manner, into general and particular.

The general or epidemic causes of fevers are such as may affect a whole city, country, army, fleet, &c. and, for the most part, depend upon some putrescent or infectious particles lodged in the air; or, upon its manifest qualities, such as its heat or coldness; its moisture or dryness, and the like.

The particular causes of fevers, or such as will affect individuals only, we may refer to three classes*, as,

- I. To a purulent fomes within the body, from confined matter, the consequences of suppurations;
- II. To a putrescent, acrimonious state of the juices, from a putrid fomes of any kind;
And,
- III. To obstructed perspiration.

From the first class, fevers of the hectic and colliquative kinds will derive their origin; from the second, fevers of the putrid or malignant kind;

* Dr. Hugh Smith,

and, from the third class, or obstructed perspiration, according to the habit of body and constitution of the patient, either the acute inflammatory, the low nervous, the rheumatic, or the intermittent fever.

The curative indications in fevers in general may be reduced to three:

The first to correct and expel the cause which, by its irritation, had given rise to the fever.

The second will depend upon proper management and regulation of the powers of nature, that the febrile impetus should not prevail beyond due bounds, or flag, too much for the proper action of the febrile matter.

The third will consist in providing for the relief and mitigation of the most urgent symptoms.

It has long been a received maxim in physic, that if the cause be removed the effects will cease.

Our attempts then in fevers should be directed to correct or expel the cause of the disease. Hence if a purulent or putrescent fomes in the habit should have given rise to the symptoms, they are to be removed or corrected by their particular *antidotes*: but as the cause, by far the most frequent, depends upon obstructed perspiration, it becomes a matter of moment in the cure of fevers to restore the excretion and expel the retained acrimonious humours which had occasioned the disease.

For this purpose, especially in the beginning of

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a febrile

a febrile complaint, such medicines as promote perspiration and expel the morbid acrimony should be resorted to; among which the antimonial preparations are said to be the most speedy in their effect.

The second indication, viz. that of regulating properly the febrile impetus, will become a matter of moment in the cure of fevers; as the disease itself rightly moderated, and restrained within proper bounds and limitations, has been reputed the best remedy for the coction and expulsion of the morbid cause; for art can only avail in regulating properly the powers of life and the circulation, that the febrile impetus may not so much prevail, as by the increased circulation to prove fatal to the body; or, on the contrary, that the powers of nature may not so much languish and flag, that there should be wanting the *vis vite* for the proper coction and expulsion of the irritating fomes. To lower the impetus of a fever, evacuations and our medicines will be advisable; to promote and increase it, and keep up the *pabulum vite*, our medicines, assisted with aromatics of different kinds, viz. saffron, castor, camphor, wine, and the like.

The symptoms most frequently troublesome in fevers are as follow:

In the beginning a sense of coldness and shivering, succeeded by heat; a nausea and vomiting; thirst, anxiety, a diarrhœa, petechiæ, profuse sweatings, watching,

watching, delirium, comatose affections, and convulsions.

These, as being the effects of fever, as that abates will frequently cease; but, if they should require any particular care, are to be attempted by removing and weakening the cause which had produced them.

The symptoms in fevers will depend either upon an inflammatory or a spasmodic affection of the several organs, a quickened circulation, or too dense and viscid a state of the fluids.

The *colanefs* and *shivering* which for the most part accompany a fever at its first onset, will be owing to a spasmodic stricture of the small capillary vessels.

The heat which succeeds will depend upon the increased and quickened circulation; or, as is sometimes the case, in the putrid fever, upon an intestine motion, or putrescent fermentation in the blood and juices.

As heat generally succeeds the shivering and coldness, it is not often that the cold fit will require a particular cure. If any medicines should be necessary, some gentle stimulating cordial; such as a little warm wine, with some suitable aromatic, may be expedient.

The heat is to be mitigated by abating and removing its cause: if from an increased circulation, by evacuations and antiphlogistics; if from a putrid

D 2
cause,

cause, by antiseptic and gentle diaphoretic medicines, which are two of the sanative properties of our medicines: and such are the vegetable and mineral acids, the neutral salts, the bark, with proper cordials, and the like.

A *nausea* and *vomiting* will be owing either to an acrimonious, putrid, bilious matter, or fordes, collected in the stomach and first passages, vellicating their coats, and irritating to excretion: or to slight convulsive motions, excited in the stomach and neighbouring viscera, by a determination of the febrile cause to these parts, is supposed to be best relieved by an antimonial emetic, or ipecacuanha, afterwards Riverius's antiemetic draught may be given to advantage.

Take of salt of wormwood ℥j.

Lemon juice ʒss.

Cinnamon water, f. n. p. ʒj.

Sweeten with lump sugar to the palate.

This draught to be taken every four hours; to this may be added a few drops of liquid laudanum, or a warm cordial aromatic, as occasion may require.

An *anxiety* may be occasioned by any cause which can impede the circulation through the lungs, and prevent the free egress of the blood from the ventricles of the heart: this then will depend either upon an inflammatory or a spasmodic affection of the lungs. When inflammation is the cause, the
antiphlogistic

antiphlogistic regimen, and our powder, No. 2, will be necessary: but, when owing to spasm, the warm cordial antispasmodic medicines, properties which *our medicines* possess in an eminent degree, with blisters and sinapisms, will be most expedient.

When an eighth or a fourth of our antifebrile powder is administered, give four spoonfuls of the following julap with it every four hours:

Take of camphorated julap

And cinnamon water, fimp : of each ℥iij.

A *diarrhœa*, in fevers, may be owing to various and different causes; either to acrimonious and putrid fordes collected in the stomach and first passages, which, descending into the intestines, irritate to excretion and a discharge of their contents, or to a determination into the intestines of some of the most acrimonious or putrescent particles of the fluids, which should have passed off by the other outlets, as the skin or kidneys: or again, it may be sometimes critical; in which case it will often prove salutary, and ought not to be suddenly checked. For the relief of this symptom an emetic of ipecacuanha will be advisable; and this, unless in case of extreme weakness, may be given at any time, or in any stage of the fever. The opiate, astringent, and cordial diaphoretic remedies, to allay the irritation and divert the flow of humours to the skin, will be

likewise necessary, and may be taken by the mouth; or, as is frequently found more efficacious, injected by the anus clysterwise. An eighth or quarter part of our antifebrile powders, No. 1 and 2, alternately repeated every four or six hours, washed down with four or six spoonfuls of the above julap; or half a paper of each, made into a clyster, with half an ounce of tincture of Japonica, and four or six ounces of warm water, in which has been dissolved half an ounce of gum-arabic, to be repeated as occasion requires, will eminently answer the intention.

The *petechiæ*, or *exanthemata*, which so frequently break out upon the skin in febrile diseases, may be either critical or symptomatical. In the small-pox, and other eruptive maladies, fevers are frequently critically terminated by the eruption; but in many other cases, as in the malignant fever, and the like, they appear as symptoms only, and neither lessen nor increase the disease.

For the remedy of *petechiæ* in general, it will rarely happen that any particular regimen or method will be required distinct from the fever itself, as the whole that will be required is properly to moderate the febrile impetus; and as the fever abates the *petechiæ* will gradually disappear.

Profuse sweatings may be either critical or symptomatical: if not critical, they often prove
very

very injurious, by weakening the patient, and depriving the blood of its thinner and more aqueous parts.

A *symptomatical sweating* may arise from a two-fold cause, and depends either upon too increased and rapid a circulation, or upon too relaxed a state of the solids, and a thinness and a dissolution of the fluids. Hence, at the latter end of a fever, in a weakened habit, colliquative sweats will frequently come on, which tend greatly to weaken the patient and impede his recovery. If an increased circulation, in the beginning of the fever, should have given rise to this symptom, blood lettings and antiphlogistics have proved the best remedies to restrain the excretion; but in the colliquative sweats, which happen at the latter end of a low fever, the tonic and bracing medicines are the only ones to be depended upon, and in particular the bark.

Take of the antifebrile powder, No. 1, grs. v.

Conserve of hips ʒj.

Make this quantity into a bolus, to be taken at once, and repeated every four or six hours; half an hour after the taking of each bolus, give the following draught :

Take of the decoction of bark ʒij.

Syrup of quinces two or three spoonfuls:

Shake them well together.

Watchings, or want of rest, in fevers, are to be relieved in a two-fold manner: by abating the cause of the restlessness the irritation, and unusual contraction and tension of the meninges and nervous febrillæ of the brain—or by administering those medicines which allay irritation, and which we know would be productive of sleep in a healthy body. For this intention, opiates in various forms should seem to claim the first place, though in general, and even when opiates fail, the antifebrile powders, No. 1 and 2, taken alternately in any convenient vehicle: a quarter of a paper every four hours or half a paper of each made up into a clyster, and repeated as occasion requires, will be found the most certain and effectual remedy.

A *coma*, or constant drowsiness and inclination to sleep, may be occasioned by every cause which can compress the brain, and prevent the nerves from properly exciting their influence in the production of the animal actions; such as a sily inspissation of the blood, obstructing or stagnating in the brain or its meninges; also a spasmodic structure of the dura and pia matter, and their appendages, impeding the free circulation of the fluids through the vessels in the encephalon.

For the relief of comatose affections, we may in general observe, that the volatile stimulating, cephalic medicines, with blisters and sonapisms, will

will most avail: under some circumstances, motives and purgatives may be useful.

Take one paper of the antifebrile powder, No. 2,

White bread ℥iij.

Cows' milk ℥vj.

Flower of mustard ℥ifs.

Slice the bread into the milk, and when it comes to a boil, take it off, and mix in the mustard: divide it into two poultices; and, as applied to each foot, strew half of the paper of the antifebrile powder on the top or surface of each poultice: remove it in eight or twelve hours according to the effect produced.

Delirium, in fevers, may be owing to an unequal or interrupted circulation through the brain and its meninges, and an irregular distribution of the nervous influence.

This effect in the different species of fevers will arise from different causes; as in the acute fever it will depend upon an inflammatory irritation, and in the low nervous fever upon spasmodic affections in the encephælon, principally perhaps the coverings of the brain: or again, a delirium sometimes arises from an affection of the stomach, and fordes collected there; sometimes also from weakness.

A *delirium* is to be removed by abating the cause. If from inflammation, or too increased an impetus

petus of the circulation, by blood lettings and the antiphlogistic regimen; if from spasms and too languid a circulation, which indeed are the most frequent cause, it will be expedient to keep up the circulation, and resolve the spasms, by the cordial cephalic and antispasmodic remedies; musk castor, camphor, saffron, &c.; but above all by sinopism and blisters joined to the free use of our antifebrile, antispasmodic, anodyne powders.

Take of the antifebrile powder, grs. vx.

Conserve of roses, ℥iss

Syrup of saffron as much as is sufficient to make the mass into three boluses.

One of which is to be given every four hours, taking after it four spoonfuls of the following julap:

Take of camphorated julap and simple cinnamon water, of each ℥iv.

And syrup of saffron ℥iv.

Shake them well together, and give four spoonfuls of this julap, or mixture, after each dose of the bolus, and repeat it two hours after.

Take of the antifebrile powder, No. 2, grs. xxx.

White bread ℥iv

Cows' milk ℥vi

Flower of mustard ℥iss.

Make

Make a poultice, to be applied to the feet, of bread and milk and mustard, then add the antifebrile powder, previously blended with a little of the flower of mustard, and let it remain on the feet for ten or twelve hours.

Sometimes where a delirium is unattended with a stupor, opiates may be of use; and when an affection of the stomach should have given rise to this symptom, a vomit will be the best remedy.

Convulsions and *twitchings* of the *tendons*, the almost constant attendants in the last stage of the fever, will depend upon some irritation or injury done to the brain, or its coverings; from preceding inflammations, suppurations, and the like; also, from extreme weakness, from inanition, and are sometimes called spasms. They are an involuntary or morbid contraction of any muscle or muscular part, and are often owing to the passions of the mind, an emptiness of the vessels from profuse evacuations, or to a weakness and laxity of the nervous and muscular system.

Spasmodic complaints are sometimes attended with pain, and others not.

A spasmodic is to be distinguished from an inflammatory pain, by an attention to the pulse, and the nature and effects of the pain itself: the pulse in an inflammation is always quicker than natural, and generally full, hard, and tense; the pain likewise

wife is equable, throbbing, and unremitting : but in a spasmodic affection the pulse is often a natural one, and the pain is mitigated at intervals, and returns more violently by fits.

In painful spasms opiates claim the first place, and should be given in large, and frequently repeated, doses; musk, castor, asafœtida, and the like, with warm cordial stimulants. The causes of deliria and pervigelia may likewise prove the cause of convulsions, which indeed generally attend or succeed to these symptoms, when violent, or of long duration.

Take of the antifebrile powders, No. 2, grains xv.

Rectified oil of hartshorn, x drops,

And as much soft extract of liquorice as will be sufficient to make them into three pills; one of which must be given every four hours.

If this form should prove inconvenient,

Take of the antifebrile powder, No. 2, grains xx.

Rectified oil of hartshorn, xv drops,

Oil of aniseeds, xxv drops to xxxx.

And make them into an electuary with conserve of roses.

This quantity may be given in four or six doses, as the urgency of the symptoms may require, in a mucilage of gum-arabic, to reduce it to the consistence of a bolus, at intervals, of four, six, or eight hours.

When

When these medicines cannot be taken in at the mouth, they must be injected clysterwise, and applied with a poultice of bread and milk, &c. to the feet.

Take of the antifebrile powders, No. 1 and 2, of each half a paper.

Of mucilage of linseed, or gum-arabic vi $\bar{3}$.

Rectified oil of hartshorn viii drops.

Inject it warm through a pipe of a bore sufficiently large to admit the powder to pass into the rectum, with the fluid part of the clyster. (For the poultice, see page 25.)

The Bilious, African, West Indian, Bengal, Marsh, Ship, and Yellow Fever,

GENERALLY comes on suddenly, and begins with a sense of debility, and a very great lowness of spirits. These symptoms are attended with a greater or less degree of chilliness, a giddiness, nausea, pains in the head and loins, and trembling of the hands: the countenance is pale, or has a yellow cast; the skin is commonly dry, the eyes dull and sometimes yellow; the pulse quick

quick and small, and the breathing generally difficult. As the paroxysm increases, the nausea becomes more violent, or there is a vomiting at first of green offensive bile, and afterwards of black dissolved blood, resembling the grounds of coffee, which is succeeded by bleeding at different parts of the body, a phrenzy, an universal gangrene, and death. Sometimes bile is also voided by stool, the tongue becomes foul, a delirium follows, a slight moisture appears on the face, and from thence spreads over the skin, and a remission ensues. On the fever remitting, the pulse usually returns to almost its natural state. This is the mildest degree of the fever; but, when the disorder gains strength, or is very violent, the remission is scarcely obvious, and is immediately followed by another paroxysm, wherein all the symptoms are increased: the mouth, teeth, and inside of the lips, are not only covered with a black crust, but the tongue becomes so dry and stiff that the patient's voice can scarcely be heard.

And when the disease proves fatal, the matter of the different excretions becomes almost cadaverous, the stools are involuntary, the pulse quick, small, and irregular; a cold sweat is diffused over the whole body, the face becomes convulsed, a *subfultus tendonum* and convulsions close the scene.

Some

Some epidemic fevers are originally putrid; others, though sometimes arising from common causes, degenerate by continuing beyond a certain time into a putrid state, especially when bilious humours prevail. Though contagion is said to be the general cause of putrid and malignant fevers, yet the bad management of inflammatory and nervous fevers is a very frequent one. Fevers of this kind are ever attended with considerable danger, even when the symptoms wear a favourable appearance.

A griping in, and a swelling of, the belly, are sometimes early symptoms: whenever they occur, if they abate not in proportion to the stools, a mortification takes place in the bowels, and the event is fatal.

When a person, upon his first arrival in the West Indies, or any other country between the tropics, is attacked with a fever, no physician can tell what symptoms may occur in its progress; however mild it may appear in the beginning, yet it will often afterwards be attended with discharges of bile or with a jaundice, or with symptoms of the most malignant nature. It is therefore always necessary, especially during a season of prevailing sickness, to endeavour by the most efficacious means, to bring the fever as soon as possible to a remission, that the bark may be administered without delay.

It

It is to be considered how far the violence of the fever, in its first attack, will admit of bleeding. A few ounces of blood, taken from the foot, has sometimes been found to relieve the pain of the head; but bleeding is in general to be used with great caution, and the repetition of it with still greater in those climates.

The chief objects of attention in all such fevers, are the contents of the stomach and intestines. Immediately upon the patient's first complaint, and during the first hours of the fever, while perhaps he is only chilly, or complains of alternate fits of heat and cold, the stomach and intestines should be cleansed, either by a vomit of emetic tartar, by a purge of manna with tincture of senna, or by an oily and purging clyster.

The patient, immediately after cleansing the stomach and intestines, especially if the skin be moist should take an eighth, or a quarter part of a paper of the antifebrile powder, No. 1, which should be repeated every four or six hours, followed by the following draught:

Take of tinctura amara $\mathfrak{z}$ ij.

Simple cinnamon water $\mathfrak{z}$ ij.

Oil of peppermint from viii to xv drops.

Syrup of lemon juice sufficient to make the draught palatable.

According

According to the state of the stomach and the urgency of the symptoms, the quantity of the antifebrile powder may be increased or diminished, taking care that the stomach is not irritated or offended; to prevent which, especially if there be a tendency to vomit, a few drops of liquid laudanum may be added to the above draught; which, in this case, is not to be given after the second dose of the powder, until the powder has remained on the stomach half an hour. The antifebrile powder, thus managed, will probably give the bowels a thorough cleansing, produce an equable sweat, and the patient will have a mitigation of the symptoms in twenty-four hours at most. Immediately upon the remission throw in the bark, if no symptom forbids.

Most antimonials, notwithstanding every precaution, prove unexpectedly violent in their operation in some habits: the best means of checking their virulence is an opiate, which has not always restrained the evacuations already too violent. This inconvenience, and the danger attending it, is obviated by using the antifebrile powders, in the manner here recommended; which, when other assistance cannot be had, may be administered with a crumb of bread in the form of a pill; or in a bolus or electuary, with any jelly, conserve, or mucilage, it receiving little if any improvement

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from

from its junction with other medicines, than being rendered more agreeable to different palates.

It has been usual to give Dr. James's powders, or the *emeticum mitius Boerhavia*, and other antimonials in the conserve of hips, except when there was a diarrhœa or too frequent stools ; in which case it was administered in the London Philonium. Although in one instance we have directed a few drops of laudanum ; yet such is the sedative, pacific property of the antifebrile powders, that instances will but rarely occur of their wanting the addition of an opiate, or any other whatever ; as it does not, like the above antimonials, irritate the stomach and bowels : *nor does the antifebrile powders admit of the addition of alkalies and mineral acids*, which, instead of assisting, would impede, or, at best, render their operation doubtful.

Their general effects have been touched on in the introduction, and more particularly explained in the progress of this essay, and will be further illustrated when we come to treat of the scurvy.

The *diet* and *drink* of the sick, &c. is a necessary attention. The patient's drink may be pure water, barley water, or toast and water, acidulated with lemon juice, cream of tartar, or spirit of vitriol. The air in the patient's room should be kept as pure and cool as possible ; and he as much exposed to it as he can well bear.

As

As the fever advances, becomes more putrescent, and the patient debilitated; no food must be allowed that has not a tendency to acidity, and a plentiful dilution with small red wine, old hock, and orange or lemon juice mixed with barley water, must be admitted; as also the free use of acids, London porter, and small beer.

Some physicians have their patients carried into the open air (as is the practice in the small-pox) during the height of the fever, or otherwise exposed to it; particularly when profuse colliquative sweating is brought on by bad management; and have by this treatment obtained a favourable change sooner than could otherwise be expected, with which, a free use of the bark and cordial liquors, they have rarely failed effecting a cure.

Towards the decline of all fevers, as to what kind of food is most proper, the taste of the patient is generally the best guide. However, the diet should be light, but nourishing; animal food of the easiest digestion, red port, Teneriffe, and Madeira wine alone, or properly diluted, may be allowed in moderation. A due admixture of vegetable and animal food is the most digestible to people in health. Scorbutic and putrid habits require acids, wine, and other antiseptics.

The antifebrile powders, given at an early period of the fever, reduces the febrile impetus, re-

lieves the head, procures sound and refreshing sleep, a free equable perspiration, immediate ease, and a remission.

After a remission of twenty-four hours, a return of the fever is to be expected, unless a sufficient quantity of the bark has been taken, or the use of the antifebrile powder followed up. In this case, if the head-ach be violent, or the patient threatened either with a delirium or coma, a blister should be applied to the back *. Recourse must again be had to the bark, as soon as ever the fever leaves the patient; and if much weakened by proceeding fits, an eighth part of a paper of the antifebrile powder; that is, from two and an half to three grains should be added to each dose of the bark.

Nine parts out of ten of the bark usually used in these fevers may be omitted by administering it in this manner with the antifebrile powder, without leaving abdominal obstructions or dropsies; and in nine cases out of ten, this fever may be cured by the alternate use of these powders alone, properly continued to prevent a relapse, when the cure has been sudden. It is often necessary to save the bark as much as possible in the navy and army: it may become scarce during a war, or fail us from other accidents; and we ought to remember, that

the bark, when not useful, may not always be entirely innocent.

When the fever continues for several days, and the patient is in a doubtful state of recovery, comatose and insensible, with a continual stupor on the brain, and a violent struggle and oppression of the vital organs, give a quarter of a paper, about five grains, every two hours, with four to six spoonfuls of the julap, No. until a whole paper is taken, which in most cases will by that time operate either by vomit, stool, or urine, or bring on a copious sweat, rest, and an immediate alteration of the symptoms, restore the senses, and recruit sinking nature.

When the respiration is laboured, an insupportable load in the precordia, with a violent and fixed pain in the stomach, or any of the abdominal viscera, with great languor and debility. All these symptoms are presently relieved by the antifebrile powder; the putrid fordes collected in the stomach and bowels ejected upwards or downwards, and the spasm removed from the region of the lungs; a remission, and sometimes a cessation of the fever obtained. Although a free respiration is restored, the bark is not to be too hastily administered, for fear the patient should relapse into a difficulty of breathing. An eighth part of a paper of the powder, repeated every four, six, or eight hours, will

be sufficient till the remission is obtained : half this quantity in the morning, and the eighth of the paper at night, may be persisted in for six or eight days, or until the fever go off. In both of these cases, the antifebrile powder, No. 2, is to be used : and when the fever has gone off, the bark may be resorted to with safety, and will be sufficiently efficacious in a lesser dose, and a few repetitions, if accompanied with two or three grains of the powder, No. 1, than the bark given in an increased dose, and much more frequently repeated.

In most tropical countries there are, properly speaking, but two seasons in the year ; the wet and the dry ; the former is commonly of about four months duration, which is a continual season of sickness among the European residents, but not in that degree that new-comers are affected ; the natives themselves rarely escaping the ravages of disease, but in a less degree. For many months of the dry season most parts of these countries are equally healthy and pleasant.

The rainy season at the British settlements on the coast of *Africa* usually continues through April, May, and June, &c. : the sultry, moist, foggy weather in July and August proceeding from the stagnating water of these rains, and the country abounding in woods that interrupt the free current
of

of the air, bring on remitting and intermitting fevers, always accompanied with extreme thirst, a nausea, and great inquietude, a frequent vomiting and purging of putrid bile ; nor does the fever usually abate until that is evacuated.

If a discharge of this humour is not made in time, the distemper assumes a continued and malignant form, the pulse sinks, and a delirium comes on, generally fatal. On board ships lying off the coast, both fever and fluxes, which are no less common at this season, make their appearance, except such ships moor out at sea sufficiently far from the land, to avoid the influence of the foul, putrid, stagnant air on shore. The sea and land breezes moderate the virulence of the noxious air; the former of which brings it off, in a weakened degree to the ships; while the latter, coming in from the sea, weakens and carries off more or less of the morbid miasmata in its course from the land.

The fevers of the *West Indies* are also of a very putrid nature, from causes nearly similar, the months of April and May, &c. being the rainy season there.

The heat of the atmosphere, loaded with vapours, induces fevers of remitting and intermitting forms, with bilious vomiting, that also become epidemic throughout the months of June, July,

and August, particularly at *Jamaica*. These fevers are incident to the natives, and those who have resided above a year on the island, as well as to other Europeans. But the new-comers are liable to a continued, a more putrid and dangerous fever; which, though not confined to any certain time of the year, coincides mostly with the former, commonly known by the name of the yellow fever, or black vomit; distinguished by vomitings of a matter sometimes green and bilious; at other times black and bloody, but chiefly by the yellowness of the skin. The blood is frequently so resolved, that before death it enters the serous vessels, tinging the saliva and humour discharged from a blister.

After bleeding, under the before-mentioned cautions, it may be found necessary to give a vomit: the best time is allowed to be in the remission or intermission of the fever, and rather soon after a paroxysm than before one. *Ipecacuanha* is the easiest emetic tartar, the most efficacious in its operation. Those vomits most productive of stools are the most useful, especially if powerful enough to procure a plentiful discharge upwards and downwards of the putrid bile. By this means a cure may be sometimes effected. But if the body remains costive, it is necessary to open it with some lenient physic; particularly if
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the bowels are affected with a dysentery and a tenesmus.

The neutral salts are useful in bringing the fever sooner to regular intermissions. The saline draught made with salt of wormwood and lemon juice, is one of the best forms for this intention.

The *spiritus mindereri* may be given, to the quantity of an ounce or more, divided into two or three draughts, when the sweats are not profuse enough, in proportion to the hot fits: the proper time for administering this medicine is before they go off, as it usually promotes a plentiful diaphoresis without heating; we may expect it will bring the fever sooner to regular intermissions.

These fevers, though never without inflammation in the beginning, and rarely have complete paroxysms; yet, when the urine breaks, and there are entire, though short intermissions, the bark may safely be given.

Without the precaution of bleeding and cleansing out the first passages, either the fever returned, or a tympanites succeeded. To these remedies may be added neutral salts, diaphoretic medicines, &c.

Though a sweat be the proper crisis, it should not be moved by heating medicines, unless the pulse should sink, and the petechiæ, or other bad symptoms appear; in which case it will be necessary

cessary to use the warmer alexipharmics, and treat the disease like (what in effect it is) a malignant fever.

For the cure of the malignant fever, as in all others, we must vary our method according to its state. I shall therefore distinguish it into three periods, and in each propose those remedies which I have found by experience to be the best. Let us suppose the first to continue as long as the person is able to go about; the second to begin with his confinement, when the fever is apparent, the head much affected, but the pulse still full; and the third when the pulse sinks, and a stupor comes on, with other symptoms of disease.

In the first period, as well as in all the rest, the fundamental part of the cure is to remove the patient out of the foul air. When that cannot be done, cause a stream or current of air to pass through the patient's apartment, by means of the door and windows, or purified by lighting a fire, diffusing steams of vinegar, &c. While the patient breathes a corrupted air, medicines will but little avail, or increase it by the effluvia of the disease.

We should begin the cure with bleeding under the restrictions of former cautions, follow it by a vomit, then give a laxative, and repeat it as often as necessary; which may be every third or fourth

fourth hour, to evacuate the putrid matter, which has usually taken possession of the first passages. Besides laxatives by the mouth, give a clyster every twenty-four hours, or oftener, if necessary. After cleansing the *primæ viæ*, a gentle diaphoresis is to be procured by proper medicines, and kept up.

It is needless to repeat what we have said of our own medicines, which can be managed as vomit, purge, or clyster; under all which forms they have a powerful tendency to promote sweat and urine.

Carefully watch a remission to throw in the bark.

In the second period, when the fever is manifest, with a quick and full pulse, moderate bleeding is indicated. When the symptoms are high, plentiful evacuations are called for; yet large bleeding has generally proved fatal, by sinking the pulse, and bringing on a delirium. Nor is moderate bleeding to be repeated but with the utmost caution; for, as many things are contradictory to common rules, so experience shews, that even those whose blood is fizy, unless the lungs be inflamed, are generally the worse for a second bleeding.

The next care is to promote a diaphoresis, which, in this state of the fever, is only to be attempted by the milder sudorifics. At this time of the disease it is generally supposed that the
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morbific cause is too much fixed to be expelled by sweatings, and has therefore been recommended*; that unless they come easily, and with relief to the patient, it is never to be forced or insisted on; and even if voluntary and profuse, with a low and quick pulse, it must be checked.

Though costiveness is to be prevented by emollient clysters, lest an accumulation of feces prove a new fomes of corruption; yet this evacuation is not to be repeated so often as in inflammatory fevers, on account of the weakness attending this disease.

We come now to the third period of the disease, where the pulse sinks, the stupor is great, a delirium impends, and petechiæ often appear. This change begins in three or four days after the fever is formed, often later, according to the treatment, and other circumstances.

But what is observable, if the patient, on the first complaints, has been once or twice largely blooded, he will be apt to pass over the second stage, *particularly in hot climates*; and from a condition little removed from health, his pulse sinking, he may at once become delirious.

Now, whether by misconduct or the course of the disease this alteration happens, we must vary the method, and have for our principal intention

* Sir John Pringle.

the support of the *vis vitæ*, especially towards the decline of the fever, when nothing can be lower than what the sick usually are.

This cannot be done without warmer medicines than what have yet been proposed (our own medicines excepted); wherefore, as soon as the pulse begins to flag, and the urine to turn pale, allow a liberal use of wine, which may be given diluted and undiluted to the extent of a quart a day, sharpened with lemon juice, and sweetened with sugar.

Perhaps there is no rule of more importance in the decline of the fever, than the giving strict charge to the attendants of the sick never to let the patient, when low, remain longer without taking something cordial or nourishing than two or three hours; having seen patients in a promising condition sunk past recovery, by being allowed to pass a whole night without any support about the time of the crisis.

As to the crisis of the fever, it may happen in different ways, without any respect to the critical days enumerated by the ancients: it sometimes happens by sweat. But the most favourable and certain, being the best termination of all fevers of this sort, is when it terminates in an eruption of small biles on the surface of the body.

In eruptive fevers it is commonly allowed that
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the patient should be kept in bed for fear of checking the eruption : but this does not always prove true, for sometimes the contrary will happen ; and sitting up, out of bed, has even been found favourable thereto.

A stupor seems almost inseparable from this fever, particularly in its low state, which frequently in the evening turns to a light delirium. But if the delirium increases upon the use of wine, if the eyes look wild, or the voice becomes quick, there is a presumption of a true phrenitis, when all heating internal medicines aggravate the symptoms ; whilst blisters, before useless, become of considerable service.

Under the emergency of these symptoms wine and cordial medicines are to be discontinued, or sparingly administered ; and the drink reduced to weak mustard whey, rendered agreeable to the palate by syrup of lemon juice or the lemonade powder. Blisters are recommended in those symptoms by Sir John Pringle, Dr. Huxham, and Dr. Lind ; and by some are called *their anchor of hope*.

An able practitioner, mentioned in the introduction to this treatise *, in order to determine the efficacy of blisters, has lately made several

* Dr. Home's Clinical Experiments.

trials or experiments on a number of patients, in the typhus nervosus, or low nervous fever, in which the advantages that resulted from them did not seem to counterbalance their disadvantages. The reason seems to be this:—The stimulent power of blisters lasts only for two or three hours during the pain, in which time the pulse commonly becomes quicker. After this, their antispasmodic effects take place, and the pulse, when they are successful, becomes slower. It is to this last effect that topical inflammations owe their cure; but it can be of little use in the typhus, as every symptom in its progress points extreme preternatural relaxation, rather than preternatural constriction or spasm. They can have no advantage, therefore, in this fever but from their stimulent power, which lasts too short a time to be of much service. Among them any disadvantages of blisters, stranguary is none of the least. I find it easy, however, to prevent this effect, so that I seldom or never observe a stranguary following a blister. Doctor Greenfield was the first who, in the beginning of this century, discovered that camphor had a power of correcting this effect of cantharides. Some, however, have doubted this quality. I tried many years ago camphor rubbed on blisters, found it to answer, and have always used it with the greatest success.

success. I once removed a stranguary suddenly in a typhus, by rubbing camphorated oil on the ancles. Notwithstanding the advantage which rubbing a little powdered camphor on the plaster has in preventing one of its uneasy effects, yet I believe it is scarcely if at all followed: more trust is put in great quantities of emulsion and the like, which often load the stomach too much, relax it, and increase the general debility.

Blisters, therefore, appear to be of little use in curing the typhus; yet they are of the greatest utility in relieving the severe head-ach, a troublesome symptom which always attends it. Blisters applied to the temples remove this symptom most successfully, without directly producing any good effect on the fever, though they may indirectly, by removing one cause of watchfulness and weakness. To prove this by facts would be to quote almost every low fever that has happened in the clinical ward. I was led to this application, by observing that the rind of a lemon, cut off thin, and the inside applied to the temples, excites a redness, and cures a head-ach. I tried blisters to the temples in a remitting fever, in Flanders many years ago, and they succeeded beyond my expectation. I have continued the use of them since that time, have introduced the practice into the clinical ward, and used them
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in every typhus with the greatest degree of certainty. This application has been much confirmed, though it did not take its rise there. This mode of application has almost superseded the use of blisters to the whole head, which have their inconveniences.

The effects of topical blisters depend, 1st, 'On their stimulus. The temples are very sensible, as the patients complain much of the blisters applied there. It is near the part affected, and communicates directly with the nerves of the eyes. If the pain arises from the nervous system alone, nothing is more proper than nervous counter-irritation to relieve it, as the nervous system is but rarely capable of suffering two pains at once. In this way all rubefacients become antispasmodics. 2dly, On the evacuation produced. The external and internal vessels arise from the same source, often communicate through the cranium, and always by means of the arteria orbitalis. If, therefore, the head-ach arises from a plethoric state of the brain, it must be cured by the depletion that follows. Hence this application, and a running kept up for several days, by issue-ointment, is the most successful remedy in obstinate ophthalmias.

A doctrine so well-founded and ably established on reason and facts, is a very proper model for our practice; but as this reasoning and facts

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were adduced from observations and experiments made in the typhus nervosus, or low nervous fever, that they should not be thought inapplicable, it may be necessary to consider the low nervous fever and the putrid malignant fever together.

The symptoms in a putrid malignant fever are many of them similar to those in the low nervous fever: hence the two have by many been confounded as the same disease; but we may readily distinguish the one from the other by the signs of putrefaction, which always appear in the one, but are wanting in the other.

The vomiting in this fever is at times constant and violent, especially in the worst kinds of the disease; and the blood being frequently in a dissolved state, is forced into the stomach and thrown up, forming what has been called by the Spaniards the *black vomit*.

The blood is said sometimes to tinge the urine and saliva, and even to issue from the pores of the skin. As the heat increases the face gets flushed, the senses are more affected, and the patient often gets wild and delirious, or drowsy and lethargic. These symptoms, after a time, are succeeded by a sweat, which is often profuse, and gradually procures an abatement of the fever.

The length of the *fit* varies considerably. It sometimes terminates in six or seven hours, though its duration is more commonly from fifteen to twenty-

twenty-four hours. In some instances it extends even to thirty-six and forty-eight hours; and Dr. John Hunter saw one example of it continuing three complete days, without any marks of remission.

The *remissions* vary much in their duration; some do not last longer than one or two hours, though more commonly they continue ten or fifteen, and sometimes thirty or thirty-six hours. The fever in some cases assumes the quotidian type, and has an exacerbation every day at nearly the same hour; but generally it observes no regularity in the times, either of access or remission.

The remissions are more or less complete; sometimes they amount almost to an intermission, though much more generally there is only an abatement of the symptoms. The sleep, during the remission, is disturbed, and procures but little refreshment.

When the fever is severe, symptoms often occur that has given the name of the *yellow fever* to the disease: it happens chiefly to the newcomers. It is produced by the addition of the jaundice to the other symptoms of the fever. There are instances of jaundice accompanying the fits of intermittent fevers in England, and examples of yellowness in the *hospital or jail fever*.

To slight feverish symptoms are sometimes

added small painful tumors in the skin, called *cat-boils*; they appear to be small carbuncles. There is first a pain felt in the skin, especially on being touched, which is soon followed by a slight swelling not unlike a common pimple: they are sometimes as large as a nutmeg, and are exceedingly painful, especially if squeezed, or near a joint where there is much motion. They do not suppurate, but form a kind of core, which is discharged by one or more holes from the small tumor. Any violence applied to them, as in common pimples, produces great swelling and pain in the surrounding parts; they are considered as favourable symptoms, being supposed to prevent a fever.

Among the symptoms which more rarely occur during the fever there are some that follow it, though but rarely. Parotids, or swellings, and suppurations of the parotid glands, are sometimes a consequence of the fever; as are also abscesses near the anus, and in other parts of the body. Dr. John Hunter saw no instance in Jamaica of the common hospital or jail-fever, although many of the military hospitals were very much confined and crowded, which is matter of some consolation, in the history of the remitting fever, to be able to say, that it is not infectious. The two diseases are very distinguishable; the disposition to remit in
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the latter, and the continued uniformity of the other, in which there is not the smallest appearance of exacerbation or remission.

The reason why the *jail fever* is not generated in Jamaica is very obvious; every house in the country is so constructed as to give as free admission to the air as possible, which the great heat of the climate renders necessary. By this means a constant perfusion is kept up, and the air that is breathed by the sick changes every moment, and therefore never acquires by stagnation and confinement those noxious qualities which prove the cause of the hospital-fever in cold climates.

Though it is impossible to refer every particular use of fever to a distant class, on account of the mixed and anomalous symptoms that arise, yet there are certain distinguishing features which afford sufficient ground for dividing them into different kinds, and such division will at least serve to facilitate description, and to afford room for laying down the outlines of practice.

The fevers which occurred most frequent on board ships, and at naval hospitals belonging to the fleet in which Dr. Blane was employed, were the infectious *ship-fever*, which is the same with the jail and hospital-fever, the *bilious remitting fever*, and the *malignant yellow fever*.

The infectious *ship-fever* does not occur so frequently in hot as in cold climates, because there

is something in the warmth of hot climates which prevents the production of contagion, as before remarked. One of the most remarkable characteristic symptoms of this fever is a greater degree of muscular debility than what takes place in other fevers. It is also a remarkable true index of the degree of malignity, the danger being in proportion to this symptom. Another pretty constant symptom of this fever is the spots known by the name of *petechiæ* and *vibices*; they occur only in the latter stages of the disease, and in cases of considerable danger.

We know of no medicine that so quickly relieves the head and procures rest and perspiration in this fever as the *antifebrile powders*. The great tendency to acrid excretions, and the danger usually apprehended by practitioners of opiates causing a retention of them, are obviated by giving this medicine. In default of the powders *spiritus mindereri*, combined with syrup of poppies, may be successfully given.

Absolute and dogmatic rules are so far from applying in the practice of physic, that there are some cases of the same disease that may require a treatment even opposite; yet there should always be some rule of action, which rule should not be held invariable, but follow the symptoms as they arise in the progress of the disease.

In an advanced stage of the fever, when weakness,

ness, restlessness, tremors, and low delirium prevail, the cordial, anodyne, antispasmodic qualities of the *antifebrile powders* will secure them reputation.

The bilious remitting fever has, for its most distinguished symptom, a copious secretion of bile: it seldom arises at sea, unless where there has been a previous exposure on shore; as when the duty of the ship occasions the men to wood or water, or bring off necessaries, or the like.

This fever, though generally shorter in its course, very much resembles the fever before described, except that it is not so equal and steady; the symptoms are more violent in the beginning, and more sudden in their efforts: it is also distinguishable from the ship-fever by bilious stools and vomits. Dr. Blane lays down the following positions: 1st, That in cases where the bile is most freely and copiously secreted no fever exists, as in a *cholera morbus*.—2dly, That in the worst sort of fevers there is no preternatural secretion of bile, but on the contrary a defect of it.—3dly, That nevertheless there is an uncommon quantity of bile secreted in most of the fevers of hot climates, and that part of the cure consists in evacuating it.

The practice of giving an anodyne diaphoretic, after the evacuation of the bowels, is a laudable effort to obtain a remission; and throw in the bark.

We need not wait for any evacuation, previous to the exhibition of the *antifebrile powders*, which is at the same time the most safe and expeditious mode of procuring a remission : we may even boldly join the bark to it from the very first, or alternate them with it, as may seem most advisable to the practitioner.

The noxious air of woods, and the morbid effluvia of marshes, from bringing on this fever, have sometimes procured it the name of the *marsh-fever*.

The yellow fever rarely occurs but under the influence of hot climates ; it differs from the bilious remitting fever in this, that the air of woods and marshes does not so commonly produce it. Exposure to the sun, the putrid effluvia of the ship's-hold, and the severer stages of the bilious and putrid malignant fever, induce the yellow fever.

This fever, as has been already said, assumes various forms, according to the constitution and other circumstances of those whom it attacks ; and is most remarkable in seizing on those newly arrived from a cold or temperate climate on their arrival in hot climates. In the course of this disease there is not a free secretion of bile, and least of all in cases that are most violent.

There is something very peculiar in the countenances of the sick in this fever, very discernible to these accustomed to patients of this sort. The
appearance

appearance consists in a yellow, dingy flushing or fulness of the face and neck, particularly about the parotid glands, where the yellow colour of the skin is usually first perceived; and in the eye and countenance remarkable expression of dejection and distress.

One of the most constant and distinguishing symptoms of this fever is an obstinate, unremitting, and painful *pervigilium*, which is the more tormenting, as the patient is extremely desirous of sleep, which is probably best relieved by the sedative, pacific powers of the *antifebrile powders*. But the most dangerous symptom is the almost unconquerable irritability of the stomach, in which perhaps our only refuge is those powders.

Dr. Blane found nothing so successful in removing irritability of the stomach as applying a blister externally to the part.—(See the paste recommended to be applied to the pit of the stomach in the *cholera morbus*). This paste, actuated with a drachm of powdered cantharides, seems well calculated to remove this dangerous symptom.

The following accurate description of the mortal epidemic fever that rages in Guinea during the rainy season, which is of the low remitting kind, raged on board the Weazel sloop of war during that season at Gambia, in August 1769, is taken from the journal of the ingenious Mr. Robertson,

Robertson, surgeon of that ship. The symptoms are arranged according as the fever appeared in a more mild or more malignant form.

In its mildest form it began with a head-ach, a sickness at the stomach, thirst, universal uneasiness, and pain, especially in the back and loins. The pulse small and quick, the skin hot and dry. In the morning these complaints were greatly relieved; in the evening exasperated, which happened through the whole course of the fever.

About the third day the violence of the symptoms increase; the tongue now becomes white and foul; the speech weak and faltering; the thirst insatiable; the pulse soft and weaker than natural. On the third night several had profuse sweats; on the fourth day the patients lose the sensation of taste, and towards the evening become very hot and restless.

On the fifth day the weakness is increased. Hitherto the patients had not been confined to bed in the day time. On the sixth, frightful dreams; an incipient delirium prevents them from sleeping.

On the seventh they grow worse; their tongues are brown, dry, and chopped; the delirium is increased, with restlessness and universal uneasiness. On the eighth, the remissions and exasperations happen as usual. The ninth is the worst day; in
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the morning they are cool, but the symptoms soon return with-increased violence.

Their pulse, since the sixth day, has been very irregular, and in general weaker than natural. After this day there is a perfect remission of the fever, but towards night they become a little feverish till the seventeenth. The crisis of the fever is a gentle purging.

In the more malignant form of the fever all the symptoms are more violent; there is from the beginning a great prostration of strength and spirits, universal uneasiness, giddiness, violent reachings, a strong, quick, and sometimes a hard pulse; a white and dry tongue; sometimes a severe purging with gripes; at other times a bad cough, a violent pain and stricture over the eyes, and costiveness.

On the second day there is an alteration for the better: about the third day, in the morning, there is a small remission, but in the evening they again turn ill. On the fourth, scarce any remission could be perceived.

When a remission happened, it did not last above three hours; the patient seemed a little cooler, but the thirst was not abated, and the palms of the hands and the soles of the feet glowed with heat: anxiety, restlessness, and frightful dreams prevent them from sleeping; their memory begins to fail; the tongue in a few minutes is white and furred,

furred; in most dry and chopped. Bilious vomitings and frequent loose foetid stools have attacked several; but those who were costive in the beginning still remain so.

Fifth, in the night, several were delirious; the tongues of some were become black, and the teeth furred.

Sixth, in the morning, a few of them had a small remission, but all had been very ill at night. The pain of the back and loins, giddiness, and pain at the bottom of the orbit of the eyes, are still very troublesome.

On the seventh, the delirium is more general, and in some the countenance is quite yellow; a wild look, heat of urine (not from blisters) an inclination to vomit, and loose stools are frequent this day.

Eighth, a few after severe bilious vomiting and purgings, which stained like saffron, had purple blotches on the face and neck. In one patient a swelling of the parotid gland appeared. Delirium, stupor, cold sweats, convulsive tremors, and catching, twitchings of the tendons, an involuntary discharge of urine and faeces are frequent this day; the pulse is very irregular.

Ninth, all the bad symptoms continued: the blotches rose above the skin, and soon disappeared; the patients thought themselves better while they remained on the skin. A bleeding of the nose occurred

occurred in one of them, which was also tinged with yellow.

Tenth, a few had a slight remission.

Eleventh, the dangerous symptoms continued; a large effusion of blood under the skin appeared on one patient, on the right side of the face and neck, a little before his death.

Thirteenth, their countenances were much more yellow, and they were seized with a purging, but not attended with gripes. One of them had a gentle and universal perspiration; he was afterwards cooler, and his complaints were relieved. Among others the bad symptoms still remained; one was seized with faintings.

Fourteenth, the purging was attended with gripes; the patients continued cooler, but very weak, and the bad symptoms still prevailed, with the *subfultus tendinum*.

Fifteenth, the bad symptoms continued; the swelling of the parotid gland in one patient was opened. Those who had the purging and yellow countenance were better; one had the piles.

Sixteenth and seventeenth, all continued better except one man.

Eighteenth, a man who for two days had appeared to be in a very dangerous state, fell into a sound sleep, followed by an equable perspiration, which proved a happy crisis. In one patient the fever continued till the twenty-first day, but it had
been

been very mild during the whole course, as to the critical days and symptoms that were most dangerous in the fever.

On the third day in the evening, a perfect remission in one case. In another case a remission of thirty-two hours was procured on the fifth day in the morning; but the fever afterwards returned for twelve hours with increased violence.

On the eighth day four died, and in one a swelling of the parotid gland formed. In the middle state of the fever an imperfect crisis happened on this day: one person died on the tenth, and on the eleventh three; on the thirteenth one died, and many were seized with purging, which proved a favourable crisis. In one an equable perspiration broke out, which was succeeded on the fourteenth by a gentle purging, and proved salutary.

On the fourteenth also another patient died, who had had bleedings at the nose, and blotches on the neck. On the fifteenth the swelling of the parotid gland was ripe for opening. On the eighteenth the unexpected crisis happened in a very dangerous case, by means of a sound sleep and a free perspiration.

Costiveness, frequent discharges of bile both by stool and vomiting, bleedings from the nose, blotches, a brown, rough, and husky tongue, a smacking of the lips, wildness of the countenance,
and

and a despondency of mind, were in every case mortal. A cough proved fatal in two cases out of three, which third was the remarkable case that came to a crisis on the eighteenth day.

An involuntary discharge of urine and fæces, except in two cases, was also followed by death: in the first case there was a swelling of the parotid gland; in the second an unexpected crisis happened on the eighteenth day:—a pain either over the eyes, or deep within the orbit, faintings, drinking greedily, or in large draughts, were dangerous symptoms.

Upon feeling the pulse, a disagreeable sensation always remained on the fingers, especially if there was a moisture on the patient's skin; but where the perspiration proved critical this did not occur.

Most of these patients were vomited and purged when first taken ill. The mortality of the fever, it is supposed, was greatly lessened by the ship leaving Gambia, and being at sea. The captain was ill of it, and took ten ounces of bark. Hence we may, in some measure, judge how many pounds of that remedy would have been requisite in cases of thirty or forty such patients, on board even a very small ship, and how far the allowance made to the surgeon for medicines was adequate to this extreme.

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An inflammatory fever is seldom observed in Africa or the West Indies during the rainy season. The flux chiefly occurs at this time, though it may sometimes make its appearance during the dry season, and is a distemper very common, and often fatal, to Europeans in both Guinea and the island of Jamaica. The most mortal epidemic, however, is that low malignant fever of the unremitting kind, which rages only in the rainy season, particularly in Africa.

The DRY BELLY-ACH is the same in those countries as in the East Indies. The GUINEA-WORM seems peculiar to Africa, and some few parts of Asia. In the former of these painful diseases, known also by name to be the *Devonshire colic*, the *colic of Poitiers*, *colica Pictonum*, and *convulsive colic*.

Begins with a sensation of weight or pain at the pit of the stomach, attended with a loss of appetite, yellowness in the countenance, a slight degree of sickness, and costiveness. A vomiting succeeds of acrid slime and porraceous bile. The pain will frequently descend to the region of the navel, and shoot from thence to each side with excessive violence; and the intestines seem as if drawn in towards the spine with convulsive spasms. The pain does not, as in most colics, abate and increase several times in a few minutes, but generally
observes

observes the same tenor. The pulse is commonly low, and as quiet as in health, without any appearance of fever or inflammation; but rather, on the contrary, a faintness and lowness of spirits. When the pain has continued long and violent, and begins to abate, the patient commonly feels an unusual sensation and tingling along the spina dorsi; which extending to the arms and legs, they thus become weak and paralytic.

As a preventative in the West and East Indies, and the coast of Guinea, it has been found of great use to wear a flannel round the waist, and to drink an infusion of ginger by way of tea.

The most effectual method of cure is for the patient to drink chamomile-tea until it returns; and, having washed the stomach two or three times, give the following medicines :

Take of the antifebrile powder, No. 2, xx grains,

Cathartic extract jð.

Essential oil of peppermint vj drops.

Camphor ij grains.

Extract of opium, from half a grain to a grain and an half.

Syrup of ginger sufficient to make a bolus.

And give it in one or two doses as urgency indicates.

Take of antifebrile powder, No. 2, ij ℥.

Tincture thebaic, ij ℥ sits to j ℥.

Tinctura sacra, j ℥.

Olive oil, j ℥.

Essential oil of peppermint, x drops.

Common decoction, vj ℥.

Make into a clyster.

Soon as the stomach is washed out with the chamomile-tea, administer the bolus and clyster; and without loss of time apply the following ointment and fomentation :

Take of antifebrile powder, No. 2, one packet.

Opodeldoc, j ℥.

Essential oil of mint, xxx drops,

Essential oil of hartshorn, x drops.

Make this into an ointment.

Take white wine mulled, one quart.

N. B. In default of wine use anodyne fomentation, with x drops of essential oil of mint.

Antifebrile powder, No. 1, one packet.

Dissolve the powder in the mulled wine or anodyne decoction, and add the essential oils.

Immediately after giving the cathartic bolus and anodyne clyster, anoint the spine and small of the back with the anodyne antiemetic ointment, and the pit of the stomach; and frequently embrocate

cate the whole abdomen and thighs with the anodyne fomentation. The anointing the ancles and soles of the feet will prevent and remove spasms.

We know of nothing of equal efficacy to relieve the vomiting when incessant, and the pain acute, equal to the medicines here prescribed, on which we have always relied with success; as well for those purposes as immediately procuring a passage, or in a much shorter time than any thing we have known to be applied or made use of.

When stools have been procured, and the pain abated; give castor oil in the undermentioned form to keep the body open, remove the remains of constipation, and prevent a relapse.

Take castor oil, $j\text{ } \overline{3}$.

Mucilage of gum-arabic, $j\text{ } \overline{3}$.

Ess. oil of peppermint, xij drops.

Camphor, ij grains.

Ex. opium, j grain.

Peppermint water, $iiij\text{ } \overline{3}$.

Make into a draught; one half to be given in the morning, and the other before dinner; and to be repeated every day as long as occasion requires.

The diet must be thin and spare, of weak broths, panada, gruel, and thin chocolate, wine and water, and very little animal food, and always of the lighter kind.

Acids are best avoided; and if permitted, should be joined to rum, brandy, or Holland gin, with water, and drank weak, and but in little quantity. The only acid that can be taken with safety is the vitriolic, which should not be used when taking our powders; neither should alkalies, as before observed. It may be given under the form of the tincture of roses, to acidulate and render the patient's drink palatable.

The dry belly-ach, though one of the most excruciating distempers, seldom proves mortal, unless it has been occasioned by sleeping on the ground, exposed to the night air, or aggravated by drinking immoderately of spirituous liquors (frequently new distilled), at the first coming on of the disease, which is too often done with a view to remove it.

The bowels should be regularly kept open with the castor oil, or some other gentle purgative; and to confirm the cure in this and all other debilitating diseases, attention should be paid to recruiting the patient's strength. Dry frictions, perpetual blisters, and a moderate use of Madeira or Teneriffe wine, generally prove serviceable.

With respect to the treatment of this disorder in Jamaica, we learn from good authority*, that after the

* Dr. John Hunter.

first evacuations by stool were procured, though the strength of the disease was broken, there still remained in many cases a disposition to costiveness, with more or less pain in the abdomen; for the removal of which it was proper to give opening medicines from time to time, as the *oleum recini*, *aloetic-pills*, and *gum guaiacum*, dissolved in spirits, or any other that agreed with the patient.

Those often brought away small balls of hardened fœces, several days after the passage of the bowels appeared to have been opened. Bitters, or an infusion of chamomile and gentian were given to strengthen the stomach.

The second stage of the disease, the palsy, is always a most obstinate complaint, and in many cases the sick never recover completely either the strength or motion of the arms or wrists.

There was frequently much pain in the paralytic limbs, and at times puffy swellings in particular parts, which appeared and disappeared suddenly: both these symptoms were relieved by the linimentum volatile; and when the pains were violent, ease was procured by opiates.

In some cases the pain in the bowels shifted suddenly to the head, the misery of the patient became extreme, and, in one instance, a temporary madness. In this state nothing procures equal relief with blisters applied to the back, behind the

ears, and to the temples* successively, as the violence or duration of the pain may require. Opiates also procure a slight mitigation of the sufferings of the sick.

This author, from his own experience, as well in this country as in Jamaica, is among those who are not for administering opiates in this disease until a free passage is opened in the bowels. He found the constitution in this island peculiarly sensible to the effects of mercury, contrary to what might be expected, were the opinions usually entertained on this subject true: for if a determination of the humours to the skin could prevent mercury from affecting the mouth, it ought to be a difficult thing to excite salivation in Jamaica, where the perspiration is at all times profuse.

He found that warm water, with some oil given as a clyster, relieved the stranguary: common salt more stimulating, in the same form, than Glauber's, or better purging salt.

The same gentleman very judiciously attributes the dry belly-ach to lead. That lead taken into the body, in all its various forms, produces colic and palsy, is a fact as well established as any in physic. Nor is it material whether the lead be in vapour, as among smelters; in a metallic state,

• See what we have inserted under blisters.

as among glaziers and plumbers; in calx, as among painters and the manufacturers of white lead; or, in a saline state, as in wine and cyder. Under every form it is equally productive of the disease in question.

The quantity of lead requisite to produce the disease admits of considerable variation; for there are clear proofs of its arising from a few grains of *saccharum saturni*, and also well-authenticated cases in which that salt has been given liberally, and without any mediate ill effect.

To use his own words,—But what is to be inferred from this more than that there are some constitutions affected in a shorter time, and by a smaller quantity of this poison than others?*

An observation applicable not only to every poison, but every active medicine with which we are acquainted. Here follows Dr. Franklin's letter to his friend Mr. Vaughan, on the subject before us.

Philadelphia, July 31st, 1786.

DEAR SIR,

I RECOLLECT that when I had the great pleasure of seeing you at Southampton, now a twelvemonth since, we had some conversation on

* Med. Transf. vol. i. p. 257. vol. ii. p. 419.

the bad effects of lead taken inwardly; and that at your request I promised to send you in writing, a particular account of several facts I then mentioned to you, of which you thought some good use might be made, I now sit down to fulfil that promise.

The first thing I remember of this kind was a general discourse in Boston, when I was a boy, of a complaint from North Carolina against New England rum, that it poisoned their people, giving them the dry belly-ach, with a loss of the use of their limbs. The distillers being examined on the occasion, it was found that several of them used leaden still-heads and worms; and the physicians were of opinion that the mischief was occasioned by that use of lead.

The legislature of the Massachusetts thereupon passed an act, prohibiting, under severe penalties, the use of such still-heads and worms thereafter.

In 1724, being in London, I went to work in a printing-house of Mr. Palmer, Bartholomew Close, as a compositor; I there found a practice I had never seen before, of drying a case of types, (which are wet in distribution) by placing it sloping before the fire. I found this had the additional advantage, when the types were not only dried but heated, of being comfortable to the hands working over them in cold weather; I therefore sometimes

times heated my case when the types did not want drying : but an old workman observing it, advised me not to do so, telling me I might lose the use of my hands by it, as two of our companions had nearly done : one of whom that used to earn his guinea a week, could not then make more than ten shillings ; and the other, who had the dangles, but seven and six pence. This, with a kind of obscure pain that I had sometimes felt, as it were in the bones of my hand, when working over the types made very hot, induced me to omit the practice.

But telling afterwards Mr. James, a letter-founder in the same close, and asking him if his people who worked over the little furnaces of melted metal were not subject to that disorder, he made light of any danger from the effluvia, but ascribed it to the particles of metal swallowed with their food by slovenly workmen, who went to their meals after handling the metal without well washing their fingers ; so that some of the metaline particles were taken off by their bread, and eaten with it.

This appeared to have some reason in it ; but the pain I had experienced made me still afraid of those effluvia. Being at Derbyshire at some of the furnaces for smelting lead ore, I was told that the smoke of those furnaces was pernicious to the neighbouring grass and other vegetables ; but I do
not

not recollect to have heard any thing of the effect of such vegetables eaten by animals. It may be well to make the inquiry.

In America I have often observed that on the roofs of our shingled houses, where moss is apt to grow in northern exposures, if there be any thing on the roof painted with white lead, such as balusters or frames of dormant windows, &c. there is constantly a streak on the shingles from such paint down to the eaves, on which no moss will grow, but the wood remains constantly clean and free from it.

We seldom drink rain water that falls on our houses; and if we did, perhaps the small quantity of lead descending from such paint, might not be sufficient to produce any sensible ill effect on our bodies. But I have been told of a case in Europe, I forget the place, where a whole family was afflicted with what we call the dry belly-ach, or *colica pictorum*, by drinking rain water.

It was at a country seat, which being situated too high to have the advantage of a well, was supplied with water from a tank which received the water from the leaded roofs. This had been drank several years without mischief; but some young trees planted near the house, growing up above the roof, and shedding their leaves upon it, it was supposed that an acid in these leaves had corroded the lead they covered, and furnished the

the water of that year with its baneful particles and qualities.

When I was in Paris with Sir John Pringle in 1767, he visited *La Charite*, an hospital particularly famous for the cure of that malady, and brought from thence a pamphlet containing a list of the names of persons, specifying their professions or trades, who had been cured there.

I had the curiosity to examine the list, and found that all the patients were of trades that some way or other use or work in lead; such as plumbers, glaziers, painters, &c. accepting only two kinds, stone-cutters and soldiers: in them I could not reconcile to my notion that lead was the cause of that disorder. But on my mentioning this difficulty to a physician of the hospital, he informed me that the stone-cutters are continually using melted lead to fix the ends of iron balustrades in stone, and that the soldiers had been employed by painters as labourers in grinding colours.

This, my dear friend, is all I can at present recollect on the subject. You will see by it that the opinion of this mischievous effect from lead is at least above sixty years old; and you will observe with concern how long an useful truth may be known and exist, before it is generally received and practised on.

I am ever,

Yours most affectionately,

B. FRANKLIN.

Dr.

Dr. Lind has remarked that the English have in this part of the world (the East Indies) four presidencies or governments, to which all their other factories are subordinate, and upon which they depend, Madrafs, Bengal, Bombay, and Bencoolen.

The climate of *Bencoolen* has proved the most sickly of these, not only to the English, but to all who have been accustomed to live in a pure air. Many English have fallen a sacrifice to the intemperature of this climate; and indeed very few of them survived any length of time, until they built a fort on a dry elevated situation, at the distance of about three miles from the town. It is called Fort Marlborough; where, during the rage of sickness at Bencoolen, the garrison is frequently healthy.

BENGAL, next to Bencoolen, of all the English factories, proves the most fatal to Europeans. The rainy season commences at Bengal in June, and continues until October; the remainder of the year is healthy and pleasant. During the rains this rich and fertile country is almost quite covered by the overflowing of the river Ganges, and converted as it were into a large pool of water. Diseases rage among the Europeans in the month of July, August, September, and October, attacking chiefly such as are lately arrived.

Here, as in all other places, sickness is more frequent and fatal in some years than in others.

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The distempers are fevers of the remitting kind ; sometimes they may begin under a continued form, and remain several days without any perceptible remission : but they have in general a great tendency to remission.

They are commonly accompanied with violent fits of rigors, or shiverings, and with discharges of bile upwards and downwards. If the season be very sickly, some are seized with a malignant fever, of which they soon die ; the body is covered with blotches of a livid colour, and the corps in a few hours turns quite black and corrupted. At this time fluxes prevail, which may be called bilious or putrid, the better to distinguish them from others which are accompanied with an inflammation of the bowels.

In all these diseases at Bengal the lancet is cautiously to be used. It is a common observation both at Bengal and Bencoolen, that the moon or tides have a remarkable influence there on intermitting fevers. However the moon's influence may operate, these observations furnish an useful hint, which is, in such situations, to take a dose of bark at the full and change of the moon, as being the season found there to be most open to an attack, or relapse of the intermitting fever.

At *Bombay* the air is more wholesome than at Bengal ; and in general the whole coast of *Malabar* is tolerably healthy. The island of *Bombay* has
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of late been rendered much more healthy than it was formerly, by a wall which is new built to prevent the encroachment of the sea, where it formed a salt marsh, and by an order that none of the natives manure their cocoa-nut trees with putrid fish.

The rains begin here sometimes in May, but more frequently in June, and for four months are very violent. At Surat and Tellicherry, on the same coast, Europeans commonly enjoy a good state of health.

Madras is the most healthy government belonging to the English; and in general the air of the whole coast of Coromandel is pure and salubrious, in respect of most other parts of India. This is fully evinced by the good health Europeans enjoy, not only at Madras, but at St. David's, Cuddalore, Maffulapatam, Visagapatanam, and Negapatnam, the Dutch presidency on this coast.

The rains do not begin on this coast until October, and continue during the months of November and December. The more violent the rains are the shorter is their duration. The quantity of rain, however, which falls at Madras, is considerably less than what falls either in Bengal or on the coast of Malabar.

If ships on their passage to India touch at the islands of St. Jago, Madagascar, St. Johanna, or Molilla, at Culpee in the river Hughly, Batavia,
or

or Bencoolen, those persons who go on shore should always return before night, as those places have proved particularly fatal to Europeans, who sleep on shore, at particular months of the year; and in all unhealthy places, when the ship lies near the land, for the preservation of the men, a fire should be kept burning on the fore-castle all night, and the ship have her awnings spread in such a manner, that the influence of the fire and smoke may extend over the whole ship.

The same directions or precautions are equally applicable to any other unhealthy place in the four quarters of the world, particularly on the coast of Africa; as Senegal, Gambia, Cachou, Whydaw, Sherbro, Benin, Bonny, Calabar, St. Paul's de la Anda, Benguela, Mazambique, &c. and in all parts of Africa, where the soil is either marshy or watered with rivers or rivulets, whose swampy oozy banks are overrun with sedges and mangroves, and noxious weeds; the slime, mud, and filth of which send forth an intolerable stench, especially towards evening; or generally surrounded with forests, or thickets of trees, impenetrable to refreshing breezes, and the resort of wild beasts.

Swarm with white ants, musquittoes, cockroaches, sand flies, bees, locusts, &c. particularly the musquittoes, which are intolerable. In such an uncultivated, swampy country, one hardly expects to hear of a season of health, yet notwithstanding

standing what is just now related ; and what is most formidable and inconvenient to new comers, and the first settlers. If any tract of land on the coast of Guinea was as well improved as the island of Barbadoes, and as perfectly freed from trees, underwood, swamps, and marshes, the air would be rendered equally healthy as in that pleasant West India island ; and notwithstanding the recent accounts from Sierra Leone so unfavourable to the new settlement, there is not a more delightful spot upon earth, nor a situation more capable of improvement than it.

The Guinea-worm, as observed before, seems peculiar to Africa and a few parts of Asia, and is supposed to be generated from animalcula, or their ova, contained in the waters of the country ; their production in the human body may probably be prevented by drinking these waters only that have been rendered wholesome, by undergoing a previous putrefaction, and exposition to the open air.

The quickest method of sweetening such water is, by passing through a series of vessels placed under each other so that it may fall into each other, and from thence into the receiver, like a gentle shower of rain, which will sweeten it, by each drop in its descent having free access to the air.

The guinea-worm is a white, round, slender worm, often some yards long, lodged in the interstices

terstices of the muscles, commonly in the legs, feet, and hands; some are also of a tape-like appearance: when it attempts to escape through the skin it occasions a swelling resembling a boil, attended with great pain, until its little black head appears in a small watery bladder on the head of the boil.

When this bladder breaks the head of the worm is to be secured by tying it to a small roll of linen spread with plaster; and part of the worm is once or twice a day to be gently drawn forth, with care not to break it, and wrapped round this roll until it is brought away entire, when the ulcer generally heals soon: but if part of the worm breaks off, the part remaining in the flesh can be ejected only by painful and tedious suppurations in different places.

Dr. Rouppe observes, that the diseased of the guinea-worm are infectious. It may at least be prudent in Europeans not to lie in the same apartments, and to avoid too free a communication with such negroes as are afflicted with this disease.

Aloetics and anthelmintics have been recommended as preventatives, and to cure or expel them, to which we cannot say any thing; but are of opinion that four or five grains of our antifebrile powders, or even two or three grains, twice or thrice a week, would prevent this disease. The powder, No. 1, may be used by any person but

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the powder, No. 2, is not so fit where a scorbutic taint prevails in this disease, or accompanies it.

The dry belly-ach and guinea-worm are diseases that are not confined to any season of the year, and seldom prove mortal ; fevers and fluxes are the most fatal to Europeans here.

The fevers in India, as already observed, are of the remitting or intermitting kind. These diseases being in a great measure similar in their symptoms, progress, and effects, to those of other hot climates, may with the diseases of the liver, &c. so common there, be referred to the treatment and method of cure, laid down in different parts of this work, for the tropical latitudes of Africa and the West Indies.

TETANUS AND LOCKED-JAW.

Wounds and Amputations.

THE tetanus is a painful and rigid contraction of the muscles of the neck, and trunk of the body : it is divided into two species—the ophisthotonus, and the omphrosthotonus ; in the former the whole trunk of the body is convulsed, and
drawn

drawn backwards in a curve, with the head bent towards the shoulders : in the latter the trunk of the body is drawn forwards with the chin to the breast. This disease is most frequent in hot countries, and is said to be endemic in South Carolina, especially among the negroes, when they were numerous there.

The locked-jaw is a disease termed by savages *trismus tonicus*, and is a rigid contraction of the muscles which raise the lower jaw. It may be either primary or secondary ; that is, either arise spontaneously, without any evident cause, or be the consequence of wounds, or other morbid affections.

Dr. Lind informs us that the *tetanus* and *locked-jaw* are most frequent in hot countries ; and seems to think opium to be the principal remedy, which he recommends the liberal use of alone, and, joined to camphor, applied to the feet ; and a strong solution of the opium applied to the wounded part when originating from such cause.

The treatment of these spasmodic diseases is nearly similar : if the pulse admit it bleed ; if they happen in consequence of an irritation from a wounded nerve or tendon, divide it directly, and dress the wound to bring on a proper digestion and cicatrix.

Dr. Leigh observes that there is no disease in which opium has been more generally recom-

mended than in tetanus; and many physicians have depended upon this remedy solely for a cure. Chambers, of South Carolina, advises opium to be given in form of a clyster, or combined with oil, and applied externally to the part. Hillary directs it to be united with musk, which he says hastens the operation, and has been found to produce the best effects.

Some very late and accurate observers * have found that opium is but little calculated to effect a cure in this dangerous disease. In a work called "Practical Remarks on West India Diseases," we find mention is made of a case where thirty ounces of Laudanum were given in a short space of time without removing the spasm or pain attending this disease.

Mr. John Hunter mentions a number of cases in which he gave opium in very considerable quantities, both internally and externally, without the smallest benefit. Many cases of tetanus occurred some few months since † in the hospitals of London, for the relief of which opium was given in large doses, and frequently repeated, but without any good effects. From these circumstances Dr. Leigh was led to believe that physicians have hitherto depended too much on this remedy for a cure; and though he says, as he is unable to point

* Mr. John Hunter. † This was in 1785 or 1786.

out one more efficacious, still it appeared to him necessary to shew the fallacy of the present practice in this disease.

Dr. Lind informs us, that Dr. Wright has of late * very successfully employed at Jamaica the effusion of cold water on the naked body in cases of locked-jaws.

We have observed, in the *introduction*, the pains taken by Dr. Home to form a scale of the relative value or efficacy of antispasmodic remedies, which, though of the highest utility to every practitioner, and the unfortunate patient labouring under these dreadful maladies, serve to shew that too much reliance should not be placed on the present antispasmodics in use; and should put us upon the research after others of greater efficacy, and more certain in relieving these diseases.

Until better are found out and applied, we beg leave to recommend to the candour and liberality of gentlemen of the faculty and others, our *antifebrile powders*, which as far as they have been tried, have turned out to be antispasmodics less exceptionable and more generally useful than those at present in use.

The use of mercury in the tetanus and locked-jaw has of late, we are informed, been attended with considerable success. As soon as a salivation

* In 1783.

is produced, it is supposed the cure is accomplished; and, in order to procure this more speedily, the patient is put into a warm bath: opium is given at the same time to procure sleep. A more particular account of this has lately been laid before the public by Dr. Donald Monro.

Our medicines have proved successful even beyond our expectations, administered as follows: The making mustard-whey the common drink, or the basis of it, will be found very beneficial. When milk cannot be obtained, a distilled simple water, or an infusion of the seeds in the proportion of an ounce or more to a pint of water, will do tolerably well.

Take of the antifebrile powder, No. 2, three packets.

Camphorated tincture of opium, of the London college, commonly called Elixir paregoric xvij ℥.

Camphor vj ℥.

Hard extract of bark j ℥.

Dissolve the powder, camphor, and extract of opium, in the elixir or paregoric, and keep this antispasmodic tincture for use. One drachm, that is, sixty grains, is a sufficient dose of this potent tincture. This tincture is applicable to many useful purposes, when cramps, spasms, or convulsive twitching of the nerves, or muscles attend, administered internally or externally. In the cases here directed, and all others to which it is applicable,

cable, it must not be given, but when the use of the other internal spasmodics are suspended, clysters excepted.

Take of antifebrile powder, No. 2, three packets.

Acetated crystals of mercury j ʒss.

Oil of hartshorn, highly rectified lvj drops.

Camphorated oil, highly saturated with camphor iij ʒ.

Extract of opium j ʒss.

Conserve of lavender flowers vi ʒ.

Mucilage of gum-arabic, sufficient to make an electuary.

One drachm of this potent electuary will be a sufficient dose, and may be alternated with the undermentioned pills. In dangerous spasms its effects are unparalleled.

Take of antifebrile powder, No. 2, two packets.

Strong ointment of quicksilver j ʒss.

Rectified oil of hartshorn lvj drops to xc.

Camphor and hard extract of bark and opium, of each iv ʒ.

Camphorated oil, iij ʒ.

Make into a liniment.

This ointment, or antispasmodic liniment, is to be rubbed in until a salivation is excited, or until the salival glands are affected, and kept up as the urgency of the symptoms may require. The parts most affected are also to be rubbed, which in some

cases will relieve the spasm before the mouth is affected.

Take of acetated crystals of quicksilver ij ℥ss.

Antifebrile powder, No. 2, one packet.

Purified assafoetida and camphor, of each j ℥ss.

Extract of bark j ℥ss.

Soft extract of chamomile, sufficient to make the whole into a mass of the consistence of pills.

Divide the mass into thirty parts, and each part into five pills; from three to five of which will be a sufficient dose in the most urgent cases.

One or two of these pills three times a day, or two in the morning and three at night, are to be taken during the mercurial unction, to expedite a discharge from the salivary glands. In cases not *scorbutic*, these pills are useful in all spasmodic affections and glandular obstructions.

Take of antifebrile powders, No. 1 and 2, of each one packet.

Linseed meal viii ℥.

Camphor and calomel, of each ij ℥.

Flower of mustard j ℥ss.

Extract of opium, and rectified oil of hartshorn, of each j ℥.

Crude assafoetida ij ℥, and vinegar, sufficient to make into a sinapism, or cataplasm, for use: to be repeated as occasion may require.

On this sinapism great dependence may be placed in the locked-jaw, and other spasmodic diseases that require immediate relief, or in cases that anywise threaten the life of the patient.

Take of antifebrile powders, No. 1 and 2, of each a packet.

Assafoetida crude iij ℥.

Opium, musk, and camphor, of each j ℥.

Rectified oil of hartshorn j ℥.

Camphorated oil j ℥.

Infusion of linseed viij ℥.

Make into a clyster; to be repeated as often as the urgency of the symptoms may require.

We may truly say the same of this clyster that has been said of the sinapism.

Take camphor and musk julap of each viij ℥.

Antispasmodic tincture j ℥.

Camphor j ℥.

Simple and spirituous cinnamon water, of each jv ℥.

Dissolve the camphor in the antispasmodic tincture, and mix them well together for use.

From half an ounce to an ounce of this mixture may be given every hour in wine-whey, or any convenient vehicle, soon as the spasmodic symptoms are abated, until the patient is out of danger; or at any other time from the beginning of the disease that should be thought convenient,
suspending

suspending the use of any other medicine by the mouth during the exhibition of it.

There are a very numerous class of diseases which arise from the involuntary contraction of the muscular fibres, in whatever part of the body they are placed. These involuntary contractions are either continued, or they alternate quickly with relaxation. Hence, with regard to the symptoms of such diseases, a very material distinction is made, and the former are called *tonic*, and the latter *clonic*.

But the remedies appropriated to the cure of these two different orders and their genera, are by authors classed together, and antispasmodic is the name they receive, whether we consider irritation or too great irritability alone as the cause of these diseases; or continued or alternate contractions as the effects produced.

Antispasmodics not being all entitled to an equal confidence, induced Dr. Home, as before-mentioned, to attempt an arrangement of their comparative merit. We were induced, from the melancholy retrospect of so many trials made by him, with the most approved antispasmodics, on seeing how few cures were performed by any one remedy, to take every opportunity of putting the antispasmodic properties of our antifebrile powders to the proof, and are warranted from their success to recommend them as the most safe, certain, and general

ral of the kind, used alone, alternated or conjoined with others of the antispasmodic kind.

As this treatise was going to the press, the second edition of Dr. Gilbert Blane's observations on the diseases of seamen, fell into my hands * : having never seen the first edition, I was naturally led to consult this, who recites from the information of Dr. Warren, physician to the king, a spasmodic case, which I have subjoined in his own words, together with some others of his own, or that may be properly so called.

This eminent physician †, in attending a case in which he was nearly interested, and in which his endeavours were rewarded with success, found the greatest benefit from opium and a warm bath. The opium was given in the form of tincture, in moderate but pretty frequent doses. The bath was composed of milk and water, and the addition of milk was no doubt an improvement; for there is something in this as well as in oil extremely soothing to the human nerves.

Dr. Warren had intended, to make trial of a bath of oil in case this had failed,. He mentioned the following observations with regard to the external application of oil, which could only be suggested by that anxious attention that was paid to the case. It was found that the uneasiness arising

* Published in 1792.

† Says Dr. Blane.

from the spasm was allayed by constantly drawing a feather wetted with oil over the temples, which had an evident effect in lulling the pain and spasm; for when this operation was left off there was an immediate recurrence of these symptoms.

Mr. Young, surgeon of the Montague, consulted Dr. Blane, then physician to the fleet, under the command of Lord Rodney *, in the following case:—a seaman, belonging to the Montague, who was wounded in the thigh by a splinter, which carried away part of the integuments and *membrana adiposa*, and lacerated in a small degree the *vestus externus* muscle. The wound did extremely well till the 23d day, when the jaw became almost entirely fixed, and the whole muscles of the wounded side were thrown into frequent spasms.

We had immediate recourse to the warm bath, which gave a degree of instantaneous relief, and was repeated twice a day for half an hour. He was sensibly better every time; in nine days was entirely free from the symptom, and continued afterwards to do well. The only other means taken for this man's recovery, besides what were used with other wounded men, were from three to five grains of opium, which he took every day in divided doses.

The next was a seaman of thirty years of age,

* 1782.

belonging to the Magnificent, who had the humerus broken and shattered by a splinter, which entered the detotoid muscle. Several large portions of the bone was extracted, and the artery was laid bare on the inside. On the fifth day there came on a large ichorous discharge, with a low quick pulse and depressed spirits, and the jaws began to close with pain and stricture on both sides about the articulation of the lower jaw. He had every day since the accident taken half an ounce of Peruvian bark, combined with opium or rhubarb, according as it made him loose or constive; this was continued, and the part externally was kept moistened all round with volatile liniment, to which a fourth part of tinctura thebaica was added: next day the jaw was almost entirely fixed, so that it was with difficulty that a little wine and water could be introduced with a spoon. Mr. Harris, the surgeon, now wisely determining to do something vigorous in this unpromising situation beat up twelve ounces of opium, moistened into the consistence of a cataplasm, with the thebaic tincture, and applied one half to each side of the jaw. The patient this day swallowed a pint of the bark decoction, with half an ounce of nitre, and took a diaphoretic draught of twenty drops of thebaic tincture, and thirty of antimonial wine. He had also the smoke of tobacco thrown up his nostrils.

On

On the third day after the attack he could open his mouth half an inch. The cataplasms were taken off, beat up afresh with the tincture, and applied anew. The bark and other medicines were continued. On the fourth day the stricture and pain of the jaw went entirely off: but the cataplasin and volatile linament were applied for three days longer. The wound produced a laudable discharge; every symptom became favourable, and he continued to recover.

The only other person who recovered from this symptom was a man in the Bedford. Several died of the locked-jaw on board this ship; and as the same means of relief were skilfully employed in all the cases by Mr. Wicks, the surgeon, the success seemed owing more to something favourable in the man's constitution, than any thing peculiar in the treatment, which consisted in the administration of the warm bath, opium and camphor, with mercurial friction on the jaw.

Mr. Baffan, surgeon of the Arrogant, another of the line-of-battle ships that engaged on the 12th of April, 1782, mixed laudanum with the dressings of all the wounds, and no locked-jaw occurred. Dr. Blane very naturally infers from these cases, that opium and the warm bath are the only remedies yet known which are of service in this complaint; and that much will depend on the judicious management of them.

Mr.

Mr. Wood, surgeon of the hospital at Jamaica, informed Dr. Blane, that in cases of the locked-jaw from injuries to small members, such as fingers, he had tried the effect of amputating the part after the symptoms had come on, but without any effect in putting a stop to them.

Dr. Rush, physician to the American army in the late war, published an essay on the locked-jaw; in which he recommends, from his own observation, Peruvian bark, wine, and blisters; and to dress the wounds with mercurial ointment, in the cure of this complaint. Dr. Blane, from some trials he made of the bark at St. Thomas's hospital, had reason to think well of this remedy in this disease.

It would be difficult to assign a satisfactory reason why this accident is more frequent in hot than in cold climates. The effect of external heat upon the living body is not to raise its temperature, even when the heat of the air exceeds that of the body*: so that we are to seek after the effects of it in some of these affections peculiar to animal life. And as the outward temperature of the air does not affect the general mass of the body, all the effects produced by it must depend on impressions made on the external surface of the body and

* See experiments on a heated room. Philosophical Transactions, 1775, vol. lxxv.

lungs; and the skin, which may be considered as a large expanded tissue of nervous fibres, endowed with universal sympathy and great sensibility, affects every organ and every function of the body, according to the state of the air in contact with it, whether cold or hot, moist or dry, pure or vitiated.

This symptomatic sensibility of the skin is chiefly affected by the state of the perspiring pores on its surface; for it is only when these are open, that the impression of the air on the skin produces catarrhs, rheumatisms, and internal inflammations in cold climates; and the external temperature in hot climates being such as keep the pores almost always open, this seems to be a principal reason of that universal irritability prevailing there; and of the general sympathy that prevails between every part, particularly as connected with the organs of perspiration.

The readiness of one part to be affected by another in hot climates, is well illustrated by the sudden translation of certain diseases. The circumstances of consequence in the cure of this complaint, is the keeping up a moisture on the skin, and guarding the surface of the body from the access of the air. This is particularly necessary with regard to the part itself, which should be constantly enveloped in warm anodyne, and emollient applications.

The

The good effects of this is particularly exemplified in the case which recovered under the care of Mr. Harris, who gave the diaphoretic medicine, composed of antimonial wine and laudanum, and applied the anodyne cataplasm to the external fauces. It was remarked, that those wounded men who lay in parts of the hospital where they were exposed to a current of air, were most liable to the locked-jaw; and the cases of tetanus that most usually occur in the West Indies, independent of wounds, are those of slaves who fall asleep in the night-time in open air.

This observation of the Doctor, joined to the method of cure proposed by Dr. Warren, recalls to my recollection how little the natives of *Africa* are subject to the tetanus and locked-jaw in their own country, that is, of the western coast of Africa; which we apprehend may arise from the prevailing custom of anointing their bodies with palm-oil or rendered suet, which universally prevails there, and in which they take great pride, from the gloss and improved glare of their black skin when greased.

We know of nothing that could warrant our not drawing conclusions in favour of our medicines in those and other spasmodic affections, after what we have just now recited.

In the engagement that our fleet had with the enemy, there were 266 killed; died of their wounds

on board 67, and at the hospital 21. Of those who died on board, 16 were carried off by the symptoms of the locked-jaw; but of those sent to the hospital, only one. The reason assigned that so few in proportion were affected with it in the hospital was, that none of the wounded were landed till near the end of the third week after the principal action; when the danger of this symptom was then, in a great measure, thought to be past; although Dr. Blane has known it to take place in every period from the second or third day till the fourth week. Only three men in the whole fleet recovered from this alarming symptom.

Dr. Wright* and Dr. Cochrane†, who successfully employed cold bathing in this disorder, found that it did not answer when the complaint proceeded from a wound, particularly the latter; from which it would seem that the locked-jaw differs from cases of tetanus. In 1780, out of nineteen amputations at the island of Barbadoes, nine died mostly of the locked-jaw.

Though the locked-jaw, in consequence of wounds and amputations, resembles frequently in its symptoms the tetanus, which arises without any external incident; yet there are many cases of the

* See London Medical Observations, vol. vi.

† Medical Commentaries, vol. iii. and a Thesis printed at Edinburgh, 1784.

former which differ materially from the violent symptoms of the other, as described by authors.

In most cases of the locked-jaw from wounds, the spasms are not in general so violent, nor attended with such exquisite pain. It sometimes happens that the convulsive twitchings are even accompanied with a sort of pleasure, as in the case of the lieutenant of the Montagu, whose case was related to Dr. Blane by Mr. Young, the surgeon of the ship, a man of skill and observation in his profession, and upon whose fidelity and accuracy he could rely.

This officer had been wounded in the elbow, at the battle of St. Christopher's, by a splinter, whereby the capsular ligament of the joint was injured. On the ninth day symptoms of the locked-jaw came on; and soon after the whole muscles of the wounded side were affected with frequent convulsive twitchings; which, as he himself said, afforded a pleasant sensation, exciting laughing, like an agreeable titillation. He died on the fourth day after it came on, and had no pain to the last.

It is to be remarked, that the locked-jaw did not take place in those cases in which the wounds had a foul and gangrenous appearance more than others; for those that digested and cicatrized favourably, were equally apt to be affected by it; and though amputations are most liable to this

symptom, the slightest injury, even a scratch, will sometimes bring it on.

It would be difficult, therefore, to establish any particular treatment that could tend to prevent accidents of this kind, as Dr. Blane observes. Mr. Bassan, surgeon of the *Arrogant*, seems to have pursued a method deserving of imitation. In addition to the method laid down of administering our antispasmodic medicines (previous to seeing Mr. Blane's valuable book), in cases of the locked-jaw, we are now disposed to recommend our medicines to be also applied in Mr. Bassan's manner; that is, to mix them as he did the laudanum, with all the dressings of the wounds; and likewise to give them internally, both by the mouth and anus, and externally in cataplasms, ointments, and liniments.

Under ulcers, the most successful method of internal application of these medicines is described; where is remarked their restorative qualities in patients debilitated to the lowest ebb, by a constant drain of foul spreading ulcers. Under the article scurvy, may be also seen some observations on ulcers.

Among the many extraordinary cases that occurred in a practice so extensive as Dr. Lind's, the following deserves to be noted:—one Tibbet was sent from his Majesty's ship the *Chichester*, to Haslar hospital, ill of the scurvy. A severe pain.
in

in the small of the back afflicted him much ; his legs and thighs were strewed with black spots, over-spread with dry eschars, or thin films ; from under which there issued a thin purulent matter.

He had also a very large hard white swelling on the fore part of the wrist, which rendered the flexor tendings of that joint quite rigid. Some days after he came to the hospital he was seized, every four or six hours, with a surprizing quick and involuntary contraction of both knees, by which his heels were made to strike upon his buttocks with a shock that might be heard at some distance.

Those contractions seized him without any previous pain, or other symptoms of their approach ; and he often remained in this miserable condition, with both heels bent back to his hips for some hours, notwithstanding the efforts of four men to extend his legs ; until by a motion, as sudden and involuntary as before, they became of themselves violently extended, and so rigid, that they could not be bent backwards. As he did not seem to suffer much pain in either of these contractions, the Doctor suspected him to be an impostor, and therefore ordered both knees to be tightly bound with a linen roller, to some splints or thin pieces of wood, used to secure fractured bones, which were placed under his hams.

Notwithstanding which, such violent and asto-

nishing contractions ensued, as quickly broke the wooden splints, and brought both heels again in contact with his buttocks.

He afterwards very strictly examined into all the circumstances attending this poor man's case; and found, by his own account, that he had received, about twenty months before, a considerable hurt in his back, by falling into the hold of a ship; and had ever since laboured under a benumbing weakness in both his legs.

Upon inspecting the seat of this hurt, there appeared to be a partial dislocation of the third bone of the vertebræ of the back, with a considerable distortion of the back bone, and projection of it towards the right side.

He continued for some weeks to suffer great distress from these contractions. Notwithstanding he daily recovered from the scurvy, in two months the lower extremities of his body, though still retaining their natural warmth, became quite paralytic; and the swelling of his back bone being much increased, he soon after expired in a paralytic and consumptive state.

RABEIS CANINA.

IT is much to be lamented that this horrid disease, to which mankind is so much exposed, should have so long baffled the force of medicine and solicitude of physicians to counteract its deplorable effects.

The great abilities of Dr. Mead, for a long time, supported the reputation of his remedy*, now grown into disuse. The turbith mineral of Dr. James, recommended on better ground as a preservative against the hydrophobia, has but too often failed.

The opium and musk medicine of Dr. Nugent, joined to cinnabar, recommended by the Doctor, in his ingenious treatise on the subject, though it claims our attention, has not succeeded equal to expectation.

The case recited by Dr. Fothergill, of canine madness, so fatal in its catastrophe to the patient, Mr. Bellamy, so feelingly related by the Doctor; who, with Dr. Watson, was witness to this affecting scene, would alone be sufficient to induce any reader capable of giving assistance to strain every nerve for the purpose. All the remedies hitherto proposed, either as preventatives or cures, were found by experience to be ineffectual.

* Pulvis antilyssus.

Dr. Vaughan, of Leicester, has been equally unsuccessful, as appears from his publication, in subduing this dreadful malady. The poison communicated to the animal fluids by the deadly bite of a mad animal, so fatal in its effects, has not found an antidote in the Tonquin* and Ormskirk remedies; nor in any other hitherto proposed, on which the practitioner could satisfactorily rely; yet there is little doubt of the efficacy of those medicines in many cases: but the scale of relative value of their curative qualities has not been, but undoubtedly ought to be settled, by some person or persons of great leisure and ability.

This is a task by no means suited to our avocations, had we abilities to perform it, which is no part of our pretensions; the most our sanguine hopes could extend to, would be a medicine less exceptionable, from being more uniform in its effects than those related; but even this is more than we dare assert, though within the range of our hope.

The symptoms are too well understood, the mode of cure usually attempted so much better explained by Dr. Fothergill, and the gentlemen of the faculty already mentioned, for us to do more than barely to mention our manner of exhibiting *the antifebrile powders* in such cases, &c.; pre-

* Musk and cinnabar.

vious to which, we beg leave to give some general remarks of the sagacious Dr. Home.

“ We have seen two remarkable cases cured by mercury, says the Doctor, a *trismus clonicus* and *spasmus gulæ*; the latter of which seemed to yield to no other antispasmodic. Do its effects depend on its general evacuative powers?—I cannot think they do, as in the unsuccessful cases it purged much. Do they depend on its salivating powers?—There is more reason to say so, as in those trials, and in those of others, its effects do not take place till the mouth is affected, and the spitting begins. The same appears to happen when mercury is exhibited in the *rabeis canina*. Besides the general antispasmodic power of mercury, it may act more forcibly in the affections of the neighbouring parts, by a counter-stimulus and evacuation made in their vicinity. If there be truth in this observation, it points out the diseases in which mercury will succeed most frequently; namely, those near the head; and it will more confirm us in making further trials with it in the *rabeis canina*.”

Writers on the subject seem to concur in these particulars: that the flaver of the mad animal will more or less follow the wound made by the teeth, as the clothing of the part bitten is more or less dense through which the wound is made.

That either the wounded part is to be cut out, if the place on which it is inflicted admits, or to be
very

very much enlarged: and if the size of the wound admits, cupping glasses applied to solicit a copious flow of blood into the wounded part, to wash out the poison, and at the same time divert the absorption of it, which this method seems calculated to effect.

That the wound should be kept open for a considerable length of time, and a flux of humours as much as possible excreted into it until the patient be deemed out of danger, for the above reasons.

That where these operations cannot be admitted, the actual cautery, the lunar caustic, or a vesicatory may be applied to advantage.

The dread of liquids, which is one of the first symptoms, cuts off in an instant a great part of the means of relief by internal means. It is with great difficulty that medicines of any kind, or in any form, after a day or two has elapsed, can be got down. Neither can the patient be properly supported under this disease; for the same difficulty precludes subsistence.

Could this difficulty be surmounted, it is probable that ample relief might be obtained from the medicines enumerated, joined to the particulars above recommended, and a salivation be brought on by mercurial unction.

However, as Dr. Fothergill suggested*, there

* See his works, by Elliot.

still remains two methods of assisting the patient, though imperfectly; first, by clysters: by this means a large quantity of aliment may be supplied; broth, milk, eggs, in various shapes, may be exhibited in small quantities, that they may be retained, whilst larger promote their own rejection.

Secondly, by baths. It is probable, that by this method large supplies of fluids may be introduced into the habit, by means of the absorbent vessels placed on the surface of the body every where.

The steam of cinnabar would be worth trial: by this means it would be practicable to impregnate the air in which the patient breathes, should he be incapable of admitting the fume in the usual mode into the fauces, so as to produce the effects of mercury on the parts affected the most speedily.

In respect of bleeding, I have only one thing to observe—if the patient is bled standing till he shews a disposition to faint, it may be done without hazard; it may abate a little of that inflammatory disposition, which is the consequence of continued irritations.

From what has been said of this dreadful disease, and the unnatural manner in which it presents us with death, much more horrible than dying; and of the faithful record of the inefficacy of medicine, it cannot be supposed that we expect

peet more attention should be paid to our medicines than any of those we have enumerated, all of which have cured by turns ; other than its success in painful, inflammatory, and spasmodic cases may seem to deserve. This desperate malady admits of the boldest practice ; upon which there should be ever this drawback, that, in the attempt to relieve the patient, he should not fall a victim to the remedy.

The following medicines are well calculated to suppress the irritation and inflammation of the disease, by counter-irritation ; and from their sedative and antispasmodic qualities being probably the most potent and speedy in their operation and effects of any hitherto combined ; and they likewise seem to possess a something not easy to be explained or reasoned on, but in effect possess a counter-virus that either expels or extinguishes the fomes of the disease ; and, by removing the *spasmus gulæ*, gives the patient not only a fair chance for his life, but also for his recovery.

Take antifebrile powder, No. 2, ij 3.

Essential oil of hartshorn, j ʒss.

Powdered cantharides, ij 3.

Strong mercurial ointment, ʒss.

Hard extract of opium, j ʒss.

Camphor, j ʒss.

Grind them into an uniform ointment.

This

This ointment should be rubbed on by the patient, or an attendant, on coming out of the warm bath every day, until the mouth is affected.

Take of antifebrile powder, No. 2, one packet.

Calomel, xxx grains.

Gum kino, xc grains.

Mucilage of gum-arabic sufficient to make them into a mass for pills.

Divide this into nine parts, and make each part into six pills. Let one be given in the morning, two at noon, and three at night; or two in the morning and at noon, and four at night, in conjunction with the mercurial unction, until the mouth is affected.

Take antifebrile powder, No. 2, one packet.

Domestic clyster, 6℥.

Blend them together.

This clyster is both nourishing and well calculated to allay the *spasmus gulæ* attending this disease, which cuts off all subsistence by the mouth, by preventing deglutition: to which nothing will contribute more than applying a mixture of equal parts of volatile liniment, and the antispasmodic ointment round the neck, refreshing it every four hours; when painful, add twenty or thirty drops of thebaic tincture to each repetition.

Take

Take antifebrile powder, No. 2, one packet.

Of musk and camphor, ij ʒ.

Powdered opium, j ʒ.

Powdered cantharides, ij ʒ.

Linseed meal, viij ʒ.

Flower of mustard, iij ʒ.

Essential oil of hartshorn, j ʒ.

Vinegar sufficient to make them into a cataplasim to be applied to the feet.

As both this and the above ointment will excoriate the skin, they cannot be repeated but at due intervals. The ointment may be so managed as to preserve a daily unction until the mouth is affected, by applying it only to one part at a time; and by that means the first excoriation may be healed before the application is repeated on the same part.

In the preparation of the cataplasim, the mustard, &c. is not to be added until the linseed meal and vinegar be made hot, ready to apply, in a state sufficiently diluted, not to be rendered too hard by the powders, which, with the mustard in a liquid state also, are to be laid on the surface of the poultice, with the camphor and musk, then the opium rubbed together with the hartshorn oil: and lastly, the antifebrile powder and cantharides sprinkled on in the moment of application. This poultice had better be laid on a thin woollen cloth, as flannel,

flannel, under which a piece of bladder without flaw, large enough to enwrap the poultice round each foot, and prevent not only the liquid parts, but even the steam or vapour to escape.

In some subjects a ptyalism will be very quickly raised by those medicines, in others more slowly; and there is an instance of one patient that the *spasmus gulæ* was taken off, the hydrophobia removed, and the patient perfectly restored, without the mouth being affected, by the means laid down; and confirmed by the use of the antifebrile powders and the cold bath, which were continued for two months after every symptom was done away.

When the spasm is removed, and a free deglutition restored, the diet should be nourishing and restorative; calculated to strengthen the stomach and intestinal canal, and partake of a tonic and antispasmodic quality as much as possible. Bark and bitters may be added to the antifebrile powder, and the cold bath, with air and exercise: and any wound that the first intention of cure required, kept open for some months after a perfect cure is effected.

We are of opinion that all that is necessary with respect of raising a salivation is, to keep the patient on the verge of salivation, and at its first appearance to restrain it. Diaphoretics should be first employed to restrain this discharge; and if not quickly accomplished, it may be successfully
checked

checked by increasing the determination to the intestines, by means of cooling purgatives; assisted in their operation by emulsions, abounding with vegetable mucilage.

THE BARBIERS.

* THE barbiere is a species of *palsy* most frequent in India:—It distresses chiefly the lower class of Europeans; who, when intoxicated with liquors, frequently sleep in the open air, exposed to the land winds. Its attack is generally sudden, and entirely deprives the limbs of motion. Sometimes all the extremities of the body are affected; sometimes only part of them.

On the Malabar coast this disease is most violent and frequent, and attacks both natives and strangers, especially in the months of December, January, February, and March. During these months the land winds blow every morning about sun-rise from the neighbouring mountains with remarkable coolness; and such, as being tempted by the serenity of the season, sleep exposed to these winds, are often suddenly seized with a very pain-

• Dr. Lind on diseases in hot climates.

ful sensation in the *periosteum* of the arms and legs. In persons of a good constitution this pain abates as the day advances, and as the air becomes warmer; but in others it continues for a considerable time, attended with a weakness of the knees, and uneasy sensation in the calves of the legs and soles of the feet, especially in any attempt to walk. This is scarce ever cured by medicine till after the shifting of the monsoon, unless the patient can be removed to the coast of Coromandel, or any place to the eastward of the Balagat mountains, where, by the change of air, they quickly recover.

The natives of the country have a method of putting the patient in a hole dug in the ground, and covering him with sand up to his neck: this is done in the middle of the day, and he remains there as long as he can bear the heat of the sand, which is considerable.

Camphor and a decoction of guaiac wood have sometimes produced good effect; also the expressed bitter oil of the *morgoose*, an Indian plant. But, notwithstanding the use of the most powerful nervous medicines, the patient generally continues paralytic for some months, unless he is removed into another air.

We recommend the use of our antifebrile powders, and the external application of the antispasmodic ointment used in the dry belly-ach, with the addition of ten drops of rectified animal oil of

K

hartshorn,

hartshorn, to the quantity there prescribed, in conjunction with the camphor and a decoction of guaiac wood. The following pill deserves attention, and may probably afford relief:

Take antifebrile powder, No. 1 and 2, equal parts,
(*i. e.*) xx grains of each.

Camphor, xx grains.

Asafoetida, xx grains.

Extract of bark, xx grains.

Essential oil of hartshorn, xxx drops.

Essential oil of mint, xxx drops,

And as much conserve of mint as will be sufficient to form the mass into the consistence of pills: which divide into five parts, and make each into six pills.

Two of these pills may be given three times a day; that is, one in the morning, two at noon, and three at night. In cases where the patient is very much oppressed with the disease, this quantity, or the frequency of giving them, may be augmented; and the antispasmodic ointment liberally applied, particularly to the spine and parts most affected.

The internal use of æther, and friction of the affected parts with mustard, prepared as for the use of the table, and diluted with vinegar, alternated with the antispasmodic unction, together with the sinapism and clyster ordered for the tetanus, will be also found useful under some circumstances: the former of these, previous to its application

to

to the feet, may be actuated with a drachm of powdered cantharides.

Under the head TETANUS and LOCKED-JAW will be found many useful remarks, and much information supported by the best authorities. And, in addition to the distinguishing symptoms before laid down between the nervous and putrid fevers, we beg leave here further to observe, that the putrid fever may be also known by the sudden prostration of strength, fœtid breath, extreme thirst, quick and weak pulse, apthæ, or a gangrenous state of the fauces; petechiæ of a dun, purple, or livid colour, vibices, or black and blue marks resembling bruises, an efflorescence upon the skin resembling the measles, and a putrid diarrhœa, with horribly offensive stools.

So small is the action of the vessels in the low nervous fever, that, under a blister, there is frequently no appearance of redness. It differs likewise from an inflammatory fever, being occasioned by profuse evacuations, dissolved watery fluids, and relaxed solids; the pulse, though quick, is here weak and low; the heat of the body but little

beyond the natural, and the symptoms in general of the spasmodic kind, independent of inflammation; pale limpid urine, with a dull sense of pain and coldness in the back part of the head, and a drowsiness without sleep; with an aggravation of all the complaints towards night. When a delirium comes on in this disease, it is seldom violent, but rather a continued muttering, &c. Sometimes miliarial eruptions and profuse sweats strike out in this fever, but seldom give relief.

The low nervous fever, by long continuance of the disease, break down and resolve the humours, end in petechial spots, putrid sweats, and become contagious, and may be said to have assumed a malignant form.

The sinking of the pulse, pale urine, uncritical sweats, confusion of the head, decay of strength, dejection of spirits, and tremor of the nerves, are symptoms common to both.

The phrenitis it is a symptom in fevers that associates indifferently with inflammatory, bilious, or malignant fevers. The cure of the symptomatic phrenitis, is opening a vein if the pulse can bear it; but if the patient be too low, it is to be attempted by blistering. Dr. Whytt observed that, by shaving the head, twelve or fifteen hours before the application of the blister, a strangury was generally prevented. But we have recently

recently related a better method of both blistering and preventing a stranguary, laid down on good authority, extracted from Dr. Home.

We have already remarked, that a crisis of the fever, terminating in an eruption of small biles on the surface of the body, is esteemed the most favourable ; it is necessary to observe that a diarrhœa also proves a favourable crisis. A bleeding from the nose, or from an artery, in the beginning of the fever, has sometimes saved the patient's life ; but hæmorrhages, when profuse, or happening towards the end of the disease, are fatal. Buboës and a swelling of the parotid glands, though not very common, are salutary symptoms. The feet should be frequently bathed or fomented with warm water, and sinapisms applied to them according to the urgency of the case.

Take oatmeal, vi 3.

Flower of mustard, ij 3.

Antifebrile powder, No. 2, ij 3.

And as much hot vinegar as will make them into a poultice, and apply it hot to the feet, with a paper of antifebrile powder, No. 2, spread over each poultice as laid on, and remain for ten or a dozen hours, as occasion may serve.

In cases of delirium with raving, accompanied with spasm or convulsive twitchings, give the following antispasmodic draught :

K 3

Take

Take a packet of the antifebrile powder, No. 1.

Of proof spirit, $\text{iv} \frac{3}{4}$.

White wine, two pints.

Cassia ligna, p^{d} . $\text{i} \frac{3}{4}$ ls.

Gum-arabic, $\text{ij} \frac{3}{4}$.

Grind the three papers of antifebrile powder found in the packet, No. 1, with the proof of spirit in a glass or marble mortar, beginning with as much of the spirit at a time as will bring the powder to the consistence of a syrup, and continue to grind it to the greatest possible fineness, washing off the lightest particles with the spirit and wine, until the whole is well blended together; then add the cassia ligna and gum-arabic; digest in moderate heat for three or four days, frequently shaking the bottle until the whole is suspended.

From an ounce to three or four ounces of which may be given every four or six hours, in very urgent cases: otherwise, from half an ounce to an ounce and an half, will be sufficient every six or eight hours, making up the draught with simple cinnamon-water; or Rhenish wine-whey drank after it. In all cases we must attend less to the dose than the effects. If a phrenitis attend, and

In very urgent cases of the delirium, throw up the following clyster every eight or ten hours also:

Take

Take aſaſoetida, jʒſs to ijʒ.

Antifebrile powder, No. 1, a whole packet.

Mucilage of linſeed, xiiʒ.

Diſſolve the aſaſoetida in the mucilage, then ſuſpend the antifebrile powder. Inject one half of this at a time.

By ſuſpending, is meant to ſo diſſuſe the powder throughout the mucilage, that it may not precipitate before it is injected; and apply a bliſter to the temples, and a bliſter to the back, preſioudly rubbed with powdered camphor to prevent a ſtranguary; or what may prove more effectual in a phrenitis, to anoint the ſpina dorsi, or back-bone, with the following liniment: the part above the bliſter up to the occiput, if the bliſter is applied to the back; if not, the whole of the ſpine or back-bone occaſionally:

Take of rectified oil of hartſhorn, ijʒ.

Turpentine oil and camphorated oil, of each two drachms.

Antifebrile powder, No. 2, one packet.

Yellow wax, ivʒ.

Make into a liniment by grinding the oils and powder well together, and ſtirring them into the liquified wax, until quite cold and uniformly mixed; if neceſſary, it may be occaſionally thickened with the yolk of an egg.

A phrenitis being an inflammation of the brain and its coverings; the uſe of the antispasmodic draught is not indicated, but bleeding, if the ſtrength of the patient permit.

Promoting the hæmorrhoidal flux in this case, as well as in all diseases of the head, is also salutary. The hæmorrhoidal vessels and carotid arteries convey the blood in different directions; and therefore, we may expect by this means a very great revulsion; the phrenitis being in this case symptomatic, will go off on the cessation of the fever.

If a *diarrhœa* comes on in the decline of the fever it may be moderated, but not suppressed. Though it may be considered as critical, yet the patient is usually too much reduced by preceding evacuations not to bridle it. I have often found when it has been treated in this manner, that, about the usual time of a crisis, the patient has spontaneously fallen into a breathing sweat that has carried off the disease.

That is, when the *diarrhœa* has been moderated by the use of the antifebrile powders.

If the disease terminate in a suppuration of the parotid glands, let the abscess be opened as soon as it can be supposed to have formed matter, without waiting for a fluctuation, or even a softness of the tumor, that may never happen; the pus being here so very viscid, that, after it is ripe, the part will feel as hard as if it had not begun.

Sometimes the disease changes into a dysentery, which being a very common distemper in hot climates, we shall assign it a particular division of this little treatise.

PART

PART THE SECOND.

FLUX AND DISEASES IN HOT
CLIMATES.*The Dysentery and Cholera Morbus.*

A DYSENTERY is attended with violent gripings in the bowels, bloody mucus, or purulent discharges; or excessive pains in the anus, with frequent inclination to go to stool, and different degrees of fever.

If the small intestines are the seat of the disease, it is known by the pain being a little above the navel, and the blood being more perfectly intermixed with the fæces.

Blood mixed with the fæces is a common, but not an inseparable, symptom; for many have all the other marks without this, at least in the beginning;

ning; and others have blood in their stools from various causes, without a dysentery; but from being mostly attended with blood, it has obtained the name of the *bloody flux*.

The other symptoms are more casual:—

Sometimes a violent bilious fever will terminate in a dysentery; intermitting fevers of a malignant kind, often end in a bloody flux.

A dysentery may proceed from two causes, different in appearance, but similar in effect; from acrimony generated within the body, or contagion received from without.

The best preventative of the dysentery, and all putrid malignant diseases, is the free use of wine, beer, vinegar, and all fermented liquors.

The putrid and contagious nature of a dysentery ranks it with the malignant and pestilential diseases; the severity and obstinacy of this disease never admit of dividing it into benign and malignant; it is always the latter.

The first stools are usually large and bilious; afterwards they are small but frequent, consisting chiefly of mucus mixed with blood. Streaks or blood denote the rupture of some small vessels in the rectum, but a more intimate mixture is a sign that the blood comes from a higher source.

This evacuation of blood, which alarms most, is the symptoms least to be dreaded: for, though the oozing be constant, except in a few cases, the
quantity

quantity of blood lost in the course of the disease is inconsiderable.

Upon the approach of death the stools become less bloody, that is less red; for the blood is then converted into a putrid ichor.

In general, though the motions are frequent, yet the evacuation is not great, except in the advanced state of the flux, when a lientery supervenes, in which the aliment passes through undigested.

By a long continuance of the dysentery the villous coat of the intestines is corroded, and the rest grow thicker by inflammation. Add to this, that when the ligaments of the colon give way, the rugæ and cells are lost, and the case ends in a lientery, or habitual diarrhœa.

The stools therefore chiefly consist of the mucus, which being removed from the intestines, their villous coat is abraded, and at last voided. Besides this, we shall sometimes, though less frequently, observe in the fæces, certain substances like bits of suet, and sometimes small hardened scybala, or round worms. As neither of these two comes away all at once, or appears in the beginning, they keep up the irritation and protract the disease.

These are the chief substances to be distinguished in the stools of those who labour under a true dysentery; for, when purulent matter is voided at first, or at any time unmixed, it is a sign that the distemper is of a different nature: not but the intestines

testines are liable to ulcerate in the dysentery, but so late, that the matter is either changed into a putrid sanies, or so blended with blood and mucus, as not to be seen.

The fæces have all along a putrid smell, especially after the mortification begins, and then they are most infectious. The gripes are generally vague, but sometimes there will be a fixed spasm in one part causing exquisite pain.

Although a great deal of wind is vacuated, yet as it is soon generated, the gripes and barborig: i become almost incessant. The stools are all preceded by sharp griping, and succeeded by some little respite; but the motions being so very frequent, the patient can have no considerable ease, unless from opiates, sweating, fomenting the belly, or after a purge.

In the beginning the stomach is usually affected with a nausea and sense of oppression; and though it be relieved by vomiting, yet the indigestion remains, by which all kinds of food turn either sour or putrid, more wind is produced, and the gripes are continued.

A hiccup sometimes arises from this cause, and then is little to be dreaded; but in the low or advanced state of the disease, when that supervenes, it is generally the sign of a mortification of the bowels, and fatal.

The falling down of the gut, in consequence
of

of the tenefinus, and a stranguary from the irritation of the neighbouring parts takes place; the disease ends in a total prostration of strength, a low and malignant fever, a sore throat or apthæ, involuntary and cadaverous stools; and, last of all, in a release from pain, with all the signs of a gangrene.

The duration and issue of the dysentery are uncertain, so much depending upon medicine, good air, attendance, and the care the patient takes of himself.

If nothing is wanting, and the flux recent, it may be easily cured; but these favouring circumstances can only concur amongst the officers, and others able to procure them.

The case is different with the sailors and private men, who not only apply late for assistance, but are either exposed to the weather, or, what is worse, shut up in the foul air of a ship or an hospital. Added to this, that no distemper is more subject to relapse; and that frequent relapses, by relaxing the tone of the intestines, and eroding their villous coat, bring on at last an habitual diarrhœa, that hardly admits of cure.

The dysentery is a disease to which Europeans are very subject in hot climates. We indeed meet with few instances of an epidemical or malignant fever which is not in some cases accompanied with a flux.

The flux sometimes appears by itself, often
ulcers

ushers in the fever, more frequently accompanies it; when alone, it is generally milder and less mortal than when attended with a fever. A necessary distinction to be made between fluxes in all climates is, that those which attack persons in perfect health may be considered as diseases idiopathic; and those which attack persons much weakened by a fever, or otherwise reduced to a low condition of body, are properly symptomatic, proceeding chiefly from weakness, of which the flux is equally a symptom and a proof.

When a violent dysentery seizes a person in health during warm weather, the following are the most proper means of relief: bleeding should be first used with great caution; a few grains of ipecacuhana be given as a vomit, and an opiate after its operation; a full dose of sal catharticum amarum be administered to cleanse the intestines, and afterwards recourse be had to ipecacuhana in very small doses, with opiates and rhubarb. When the pain in the bowels and fever is gone, and the purging much abated, the cold bath will contribute greatly towards a perfect re-establishment of health.

Sometimes at the beginning of this disease, especially when accompanied with a fever, relief has been obtained from dissolving an ounce of manna and two grains of emetic tartar in a pint of common emulsion, with the addition of half an ounce
of

of syrup of poppies, and giving an ounce of the mixture every hour until the bowels are sufficiently emptied; after which an opiate was given, and then a mixture of the bark with opium, to complete the cure. A few drops of essential oil of peppermint is a very proper addition.

Many men of eminence* forbid the use of opium in dysenteries before evacuants have been administered, because from its tendency to produce costiveness. An opinion very different is now entertained by physicians high in estimation; they suppose that a dysentery depends on debility, affecting the intestinal canal particularly, and recommend the free use of opium and wine previous to any evacuation: by this practice we are told that the tormina and tenesmus, so common to this disease, are quickly removed†.

This we know, that our antifebrile powders have exactly these effects with the greatest certainty, without the smallest danger of penning up the morbid acrimony, which it either counteracts, extinguishes, or expels, unassisted with any other medicine, much more expeditiously than the united efficacy of the medicines in use: so that in all cases where it is adviseable to shun opiates,

* Wepper, Bontius, Sydenham, Pringle, Young, Zimmerman, and Lind, by his practice.

† Leigh.

which are said to lock up the morbid matter that medicine or nature might otherwise drain off, the antifebrile powders may be successfully applied, and depended on alone, or combined with opiates, whose bad qualities they counteract.

Their uniform operation is never to exasperate, but always mitigate, morbid irritability, or its effects on the nerves and vascular system. Bleeding being premised, according to the nature of the symptoms, and strength of the patient, as before suggested,

Take of antifebrile powder, No. 1, two packets.

Mulled wine, 4 pints.

Compound spirit of lavender $\text{ij } \bar{\text{z}}$.

Dissolve the powder in the mulled wine, then add the compound spirit of lavender.

Take of the cold infusion of carduus, $\text{xij } \bar{\text{z}}$.

Of the above antifebrile wine, $\text{iiij } \bar{\text{z}}$.

Essential oil of peppermint, xx drops.

Syrup of orange peel, $\text{i } \bar{\text{z}}$.

Ipecacuhana, xx grains.

Dissolve the essential oil in the syrup, and blend them well together with the antifebrile wine.

Give an ounce or two of this mixture every half or every hour, until it operates as an emetic, and wash out the stomach with chamomile tea.

Take

Take of simple cinnamon water, xij ℥.

Of antifebrile wine, iij ℥.

Pure nitre, ij ʒ.

Essential oil of peppermint, xx drops.

Syrup of orange-peel, i ℥.

Give of this saline draught three or four ounces at a time.

Take of the antifebrile wine, xij ℥.

Terra Japonica, iij ℥

Hard extract of Peruvian bark; ij ℥.

Extract of logwood, vj ℥.

Essential oil of peppermint, 60 drops.

Hard extract of opium, xx grains.

Syrup of orange-peel, iij ℥.

Dissolve the extracts in the antifebrile wine, and unite the essential with the syrup, and blend them altogether.

From four to six drachms of this antifebrile antidyenteric balsam may be given once or twice a day; and from six drachms to an ounce at night, in very urgent cases; and proportionably less as the symptoms indicate.

If the balsam binds the belly before the fomes of the disease is evacuated, give the following clyster in the morning, and the balsam again at night.

Take antifebrile wine, ij ℥.

Infusion of linseed, vj ℥

Linitive electuary, i ℥.

Essential oil of peppermint, x drops.

Essential oil of anniseeds, 60 drops.

Cholera Morbus.

THE cholera morbus is a violent vomiting and looseness, from the bile regurgitating into the stomach, and descending liberally into the bowels, attended with acute pains, gripings and inflations in the upper intestines; great thirst, heat, and anxiety; a quick and unequal pulse, cold sweats, and, in the last stage, a syncope, and coldness in the extremities.

It is a very bad sign when what is discharged by vomit, has an excrementitious smell.

There is no disease in which a person seems nearer death, and yet afterwards recovers.

The cholera morbus and dysentery are frequent diseases of most hot countries. They appear in the same season with fevers, and seem to be only particular determinations of the corrupted humours; to which, if the first passages give vent, a cholera, or flux, ensues; but if they are retained and assumed into the blood, they occasion an intermitting, remitting, or continued fever.

It some times comes on suddenly with delirium, attended with constant watchfulness and vomiting of bile of various colours, but chiefly green.

The antiacid, balsamic, anodyne qualities of the medicines ordered in the dysentery, for easing the
pain,

pain, expelling the wind, and acrid fumes of the disease, contracting the mouths and healing the erosions of the vessels which empty their contents into the intestinal canal, during the morbid exacerbation, will be found to exceed any expectation that could be formed previous to trial.

The intention of cure consists in clearing the first passages of the acrid bile, and paliating the most urgent symptoms.

The best way of evacuating the stomach of its contents is, by promoting the vomiting with large draughts of chamomile tea, or decoction of quassia, adding a few drops of spirit of hartshorn, and essential oil of peppermint, to every second or third draught, which tend to remove the cramps and spasms, which are often very distressing.

Clysters of the same, repeated as they return, with an ounce of antifebrile wine in each, until the intestines likewise are perfectly clean; then

Take of antifebrile wine, $\text{vj } \bar{\text{z}}$.

Tincture of mint, $\text{x } \bar{\text{z}}$.

Essential oil of peppermint, xij drops.

Syrup of miconium, $\text{ij } \bar{\text{z}}$.

Thebaic extract, viij grains.

Dissolve the extract of opium in the wine, and unite the oil with the syrup; from an ounce to an ounce and a half to be given every four or six hours.

Take of mucilage of gum-arabic, $\text{vj } \bar{\text{z}}$.

Antifebrile powder, No. 1, xxx grains.

Olive oil camphorated, $\text{i } \bar{\text{z}}$.

Make into a clyster by uniting the oil with the mucilage, and add the powder.

Take of antifebrile wine, $\text{ijj } \bar{\text{z}}$.

Antifebrile powder, No. 2, one packet.

Essential oil of peppermint or common mint, xij drops.

Conserve of lavender flowers, sufficient to thicken the whole to a proper consistence, to lay between the folds of a piece of linen on the pit of the stomach, without running or spreading beyond the limits intended.

The rapid progress of this disease, so fatal in its effects, demands every possible assistance from medicine, closely followed up; yet, as we before observed, there is no disease in which the patient is so near death and recovers so quickly. We wish it could be also said of those fatal diseases, that they do generally recover; we shall be able to shew that two to one of them who have been treated in this manner, have recovered; and when the attack of a cholera morbus, dysentery, and even the black vomit, were sudden and violent, with but little hopes of recovery.

The foregoing medicines for restraining the violent reaching in the cholera morbus, are much assisted by embrocating the whole abdomen with

warm

warm mulled wine, or anodyne fomentation; and the above anodyne paste applied to the soles of the feet and ankles, will have a strong antiemetic and antispasmodic effect, that may be always depended on in this and similar cases, in conjunction with their application to the pit of the stomach, as already recommended. The following symptom in the dysenteries, mentioned by Dr. John Hunter is worthy of remark:—Is an immediate call to go to stool upon swallowing any thing either solid or liquid, accompanied with a feeling as if what were just swallowed were running through the bowels. This sensation is often so strong that the sick imagine that the food they have taken has really passed through them, and are not convinced of the contrary, till they find the discharge has been a slime or mucus, without any resemblance to what they had swallowed. This symptom shews great irritability in the bowels, by which a motion excited in the stomach is propagated almost directly to the anus.

In the dysentery and cholera morbus, when the violent symptoms are abated, great attention should be paid to the diet of the patient, whose strength should be recruited with restorative, balsamic subastringent, antiseptic food and drink, light digestible food, and wine properly diluted for drink; light broths, sago, rice, panada, chocolate, &c.; good old rough cyder, a tea made of ginger and bark, instead of common tea, and wine sharpened

with lemon juice, and lowered with water or whey; chamomile joined to any agreeable aromatic, made into tea, is also exceedingly good; mint, sage, and balm tea; almond emulsion, most antiseptics, bitters, and tonics are serviceable, with warm corroborants. The convalescents should be denied the use of milk, except diluted with lime water, otherwise it has been found to renew the gripes, and sometimes promote a relapse. Fermented liquors of the malt kind are not congenial to this disorder, except in old dysenteries of long standing. Notwithstanding that this is a general opinion, I have known bottled porter to be eagerly desired, much used, and very beneficial to convalescents, in these latitudes. And also the following electuary.

Take of columbo root,	} of each ʒss.
Extract of bark,	
Extract of logwood,	
Gum kino,	
Nitre,	
Extract of quassia, ʒss.	
Antifebrile powder, No. 1 and 2, of each j ʒ.	
Essential oil of peppermint, c drops.	
Aromatic species, j ʒ.	
Syrup of garden poppies, sufficient to make them into an electuary. S. A.	

From half a drachm to a drachm of this electuary may be given once, twice, or thrice a day, and washed down with a glass of peppermint water,

as

as a warm corroborant, astringent medicine, equally antiseptic and antispasmodic; and well calculated not only to strengthen the bowels, but the whole system; being also a good corrector of the bile and promoter of digestion. And should any latent acrimony of the disease remain in the system, there is no doubt of its either extinguishing it or expelling it to the surface, and detaching it from thence; the chronic stage usually depending upon a laxity of the bowels.

The removing the patients into a purer air as early in the attack of these diseases as possible, will much influence their recovery, and confirm it in a convalescent state.

In the chronic state of the dysentery, laxatives may be alternated with such subastringent, tonic, antiseptic, anodyne medicines, as the one will prevent a relapse into a bad state, while the other preserves a drain for any thing acrid or offensive that may be still generated. Vomits have been strongly recommended, and it is usual to give them in the beginning. It should always be remembered that to give an emetic, is not a thing innocent in itself; it must always do good or harm; it is most beneficial when it proves purgative; surely then a purgative that does not produce the distressing sickness of an emetic, had better be tried at first, as the more speedy way of procuring relief. Astringents are most useful, when the stools are

frequent, copious, and without gripes. If the disease terminates in a tenesmus, or if the symptoms prove troublesome, it is often removed, and always relieved, by our anodyne clyster: in cases that require their being given frequently, they may be given in a more dilute state, to wash off adhering acrimony: they should not be given oftener than once a day.

DIARRHŒA.

A DIARRHŒA is a too frequent discharge of the contents of the intestines, without a violent degree of pain and sickness; the effects are loss of appetite, sometimes a nausea, fever, weak pulse, dry skin, and a continual thirst.

Great caution ought to be used in stopping it, especially in full habits, as it is mostly the salutary efforts of nature to throw off the offending cause; and the obstructing this cause usually brings on a fever.

If the patient is plethoric, and in the prime of life, bleed, then give an emetic, which may be occasionally repeated. The diet should be sago, rice, gruel, sea-biscuit, panada, gum-arabic, dissolved in the common drink, &c.

In

In case bad digestion has occasioned this disorder, the Peruvian bark may be prescribed to advantage, after the primæ vitæ has been previously cleared.

When a purging succeeds to an obstructed perspiration, the flow of humours should be directed from the intestines to the skin; which purpose will be very well answered by the following pills:

Take antifebrile powder, No. 2, xxij grains.

Ipecacuhana, xxij grains.

Hard extract of bark, xxiv grains.

Hard extract of opium vi grains.

Essential oil of peppermint, xxiv drops.

Make into a mass of the consistence of pills with conserve of roses, and syrup of saffron.

Divide the whole into six parts, of each make three pills. Give one in the morning and two at night; encourage perspiration with whey, and other warm diluting drink.

If the sordid fomes of the disease have not been evacuated previous to a course of the pills, administer the following powder in any convenient form, or any proper vehicle:

Take rhubarb, xv grains.

Cascarrilla bark, j 9.

Magnesia alba, j 3.

Bitter purging salts, powdered, 3 ss.

This

This powder will have a very good effect : the purging salt will brisken the operation of the rhubarb, which, whilst it acts as a cathartic, will operate in conjunction with the cascarilla as a tonic. In the mean time the magnesia will absorb and neutralize the acid in the intestinal canal. Perhaps mucilage of gum-arabic may be equal to any vehicle it could be given in.

[See the article diarrhœa, under general observations on fevers, and page]

Dr. Houlston, of Liverpool, in his pamphlet, recommends the friction of mercurial ointment on the abdomen, as a cure for old obstinate fluxes.

Whatever objections may lye against the use of Peruvian bark in fluxes, there are other bitters not only safe but useful in restoring the tone of the bowels ; of this kind are simarouba, quassia, and chamomile flowers.

Dr. Gardner, of South Carolina, recommends a weak decoction of simarouba as a specific, in the quantity of a scruple to a pint of water. A tincture of gentia and cassia ligna in port wine has proved highly advantageous.

PART THE THIRD.

AGUE AND DISEASES IN HOT CLIMATES.

Intermitting Fever.

AN intermittent fever is known by a violent shivering or cold fit, attended with a head-ach, lassitude, small, quick, and weak pulse, pain in the back, yawning and stretching; by a nausea, with an inclination to vomit, a quickness of breathing; the urine is crude, thin, and diaphanus, without any sediment: these symptoms abating a little, are succeeded by great heat, and afterwards by profuse sweats, which terminate the fever for that time. On the next day the patient is feeble and cold, his urine turbid, and lets fall a copious sediment of the latteritious or brick-dust kind.

The intermittent fever, or ague, is commonly
divided

divided into the quotidian, the tertian, and the quartan. In the quotidian ague there is a fit once in every twenty-four hours ; in the tertian there is an apyrexia, or intermission, for at least twenty-four hours ; it is called a quartan when the patient is two days free from the fever ; and this is more difficult to cure than a tertian or quotidian, which last is often cured by $\frac{3}{4}$ ss. of good bark.

Quartans frequently extend from autumn to spring. An autumnal ague is more difficult to cure than a vernal. Quotidians, and double tertians, especially when they anticipate the hour of their return, are apt to change into continual fevers, and are then attended with great danger.

In full habits in the spring bleeding is often necessary ; a vomit of vinum ipecacuhana should scarce ever be omitted ; after which inject an emollient clyster to empty the bowels.

If a nausea or sickness attend, give an emetic, but if not, the tinctura sacra, or Rufus's pills, which are preferable ; give them in the intermission, immediately after the fever has ceased, so that its operation may be over by the return of the next fit.

If the paroxysm appears regular, passing through the cold, and hot, and sweating stages, and the intermission is attended with an even, steady, soft pulse, and well charged urine, we may boldly venture to throw in the bark ; but otherwise it is of great consequence to be wary in the exhibiting of it;

it; if not well-timed, might be productive of very dangerous obstructions.

Take decoction of the bark, 1 ℥. to ij ℥ss.

Spirituous cinnamon water, ij ℥.

Balsamic syrup, i ℥. m.

Opium has been found very effectual in removing intermittent fevers. The proper time of giving it is half an hour after the commencement of the fit. The following is an agreeable form :

Take barley water, ℥ss.

Thebaic tincture, xx drops.

Nutmeg water, and

Syrup of mecenium, of each ʒij. m.

The opium relieves the head-ach and fever, and promotes a profuse sweat. Dr. Lind, who introduced this practice, gives the opiate in about two ounces of tinctura sacra, when the patient is costive, ordering the bark immediately after the fit. Thus the fit is shortened, and the intestines cleansed before giving the bark.

If the bark should vomit or purge, a few drops of tincture thebaic may be added to each dose; one ounce and an half is generally sufficient to put a stop to the fever; but it is to be continued daily, though in small doses, till the patient has recovered his strength.

The first indication of cure in an irregular
ague,

ague, is to bring it to be regular: this is done partly by saline or emetic, and laxative medicines.

After an ague is cured by the bark, no purgative, or even laxative, should be given for some length of time. When the viscera is perfectly sound, cold bathing may be of great use to prevent the return of those fevers.

Should the bark agree in no form by the mouth, inject the following clyster:

Take of extract of bark, iij ℥.

Antifebrile powder, No. 1, one packet.

Mulled wine, viij ℥.

Infusion of linseed, xxii ℥.

Oil of aniseeds, xxx drops.

Dissolve the extract of bark and the antifebrile powder in the mulled wine; add them with the oil of aniseeds to the infusion of linseed: make this quantity into three clysters, and give them every four, six, or eight hours, as the urgency of the symptoms indicate.

If contrary to expectation, this clyster should bind the belly; when that is the case, give the laxative clyster, No. , interposed between, as often as required.

The best form of giving the bark is in powder, in which its constituent parts seem to be in the most effectual proportion. For covering the taste, different patients require different vehicles: extract

tract of logwood, extract of licorice, aromatics, acids, Port and Rhenish wine, porter, small-beer, milk, butter-milk, mucilage. It may be given in the form of an electuary with currant-jellies; or with rum or brandy, or any other spirits.

Take hard extract of Peruvian bark, xx grains.

Extract of logwood and licorice, of each xv grains.

Mucilage of gum-arabic enough to form them into a bolus.

In the present practice the bark is given from the very commencement of the disease, even without previous evacuations; which, with the delay of the bark, or under doses of it, by retarding the cure, often seemed to induce abdominal inflammation, scirrhus, jaundice, hectic, dropsy, &c. symptoms formerly imputed to the premature or intemperate use of the bark; but which are best obviated by its early and liberal use. It is to be continued not only until the paroxysms cease, but till the natural appetite, strength, and complexion return. Its use is then to be gradually left off, and repeated at proper intervals to secure against a relapse; to which, however unaccountable, independent of the recovery of vigour, there often seems to be a peculiar disposition.

Although Peruvian bark acts powerfully as an astringent, as a tonic, and as an antiseptic, yet those principles

principles will by no means explain all the effects derived from it in the cure of diseases. The antiseptic powers of vinegar and bark united, are more than double the sum of those taken separately. The astringent power of the bark is increased by acid of vitriol; the bitter taste is totally covered by it.

Practitioners have differed much with regard to the mode of its operation. Some have ascribed its virtues entirely to a stimulant power; but while the strongest and most permanent stimuli, have by no means the same effect with bark in the cure of diseases, the bark itself shows hardly any stimulant power, either from its action on the stomach, or any other sensible parts to which it is applied.

From its action on dead animal fibres, there can be no doubt of its being a powerful astringent; and from its good effects in certain cases of disease, there is reason to presume, that it is a still more powerful tonic.

To this tonic power some think that its action as an antiseptic is to be entirely attributed; but that, independently of this, it has a very powerful effect in resisting the septic process, to which animal substances are naturally subject, appears beyond all dispute, from its effects in resisting putrefaction, not only in dead animal solids, but even in animal fluids, when entirely detached from the living body.

Many

Many practitioners therefore, are disposed to view it as a specific. If by a specific, we mean an infallible remedy, it cannot indeed be considered as entitled to that appellation, but in as far as it is a very powerful remedy; of the operation of which no satisfactory explanation has yet been given, it may with great propriety be denominated a specific. And whatever its mode of operation may be, there can be no doubt that it is daily employed with success, in a great variety of different diseases.

It often pukes or purges, and sometimes oppresses the stomach. These and many other effects that may take place, can in general be counteracted by remedies particularly appropriated to them. Vomiting is often restrained by exhibiting it in wine; looseness by combining it with opium; oppression of the stomach, by the addition of an aromatic.

After having done so much justice to this powerful drug, an increasing knowledge of which has grown upon us for upwards of 150 years; the extensive use of which has been so great in medicine, that it has become an article of considerable commerce both to the Spaniards, and those European nations who purchase it from them, as to make the planting and cultivating of whole woods in South America necessary to supply its demand.

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Notwithstanding

Notwithstanding which, we have seen that the experiments of the ablest chemists, nor the observations of physicians of the first eminence, have not been able in all this time, satisfactorily to explain its action, or mode of operation. However extraordinary this may appear, it is indisputably true.

Surely then there should be ample allowance made for us and for our medicines, if we have not been able to furnish the reader with as full and satisfactory an explanation of the action and operation of them, as he might at first sight expect, which bid fair to approach as nearly to the character of specific in many diseases incident to Europeans in hot climates, and probably to as many more in these temperate regions, as any that have hitherto deserved that share of credit with the world.

* How the benefits of opium were discovered in certain diseases, seem rather difficult to explain: but certain it is, that this remedy has been long used in intermittent fevers; and some very old writers† depended wholly on this remedy for a cure‡. Many have advised it to be given before the hot stage, or at the moment of its appearance; by which, it is said, the disease has often been re-

* Dr. Leigh.

† Schulz, Dalberg.

‡ Paracelsus, Btmuller, and others, quoted by Dr. Leigh.

moved*. Others are of opinion, that it should be administered one hour before the hot stage, by which the paroxysm is shortened, and the patient is freed from pain.

From some very late experiments†, it is found that, given in the hot stage, opium, as well as volatile alkali, has been observed to allay the heat, thirst, head-ach, and delirium, to induce sweat and sleep, to cure the disease with the less bark, and without leaving abdominal obstructions, or dropsy.

It appears that Dr. Lind gave volatile alkali alone, that is the vehicle excepted, which was cordial julap, to a patient, who, in half an hour after being seized with a fit of the ague, became delirious, then comatose, at length speechless; and who, in two hours afterwards, recovered his senses, so as to swallow with ease two ounces of tinctura sacra; and as soon as the sweat had abated, without waiting for the complete effect of the purge, half a drachm of the bark was thrown in every four hours. He began taking the bark three hours after he had taken the tinctura sacra; but before he had taken five drachms of the bark, he was seized with a second fit, and in like manner became delirious, comatose, and speechless.

Sinapisms were applied to his feet, and other

* Murray.

† Dr. Leigh.

irritating applications used, until the fever terminated by a plentiful sweat. He was ordered a drachm of the bark every hour; he soon took two ounces of it, which had so happy an effect, that the fever left him entirely, and he had not any subsequent dropfy, jaundice, head-ach, or great weakness, which either the continuance of the fever, or its repeated attacks often brought upon others.

The Doctor observes, that even a delirium in the hot fit is not increased by opium, though opium will not remove it. That if the patient be delirious in the fit, the administration of the opiate ought to be delayed, until he recovers his senses. There can be no doubt that this was the Doctor's reason for administering volatile alkali, in the case here recited, instead of opium.

Our medicines require none of those precautions. These effects perhaps suggested the use of opium in typhus fevers; and we find that many physicians of the highest eminence depend now principally on this remedy for a cure. Dr. Cullen, in his *Materia Medica* observes, that opium may be used in this disease as a stimulant, because the *vis vitæ* is very low; but when the remissions are distinct, it should then be administered as a sedative.

COMPARATIVE EFFECTS OF OUR
MEDICINES.

OUR medicines, employed in the same intention of cure as the *bark*, does not require the previous evacuations, still so much insisted on by practitioners. They do not require the same attention in fevers, to keep the bowels open, to evacuate the redundant bile, having an antibilious effect, and an unerring tendency to expel all kinds of acrimonious matter, or extinguish it.

Like the bark, they, in the confluent small-pox, (*a disorder so fatal among Negroes in the West Indies*), promote the languid eruption and suppuration, diminish the fever through the whole course of it, and prevent or correct putrescence and gangrene: they do not, like the bark, require previous evacuation in contagious dysentery, from their antiacid, antiputrescent qualities.

They do not, like the bark, induce abdominal inflammation, scirrhus, jaundice, hectic, dropsy, difficulty of breathing, &c. which some of the ablest practitioners still insist in attributing to the improper use of the bark, which they alledge to be a medicine prone to exasperate those diseases that it does not relieve.

Administered in the cold stage, in the hot stage, and before the fit in intermittents, they have had the happiest effects: given in the hot stage, they allay the heat and thirst, head-ach, and delirium; induce sleep and sweat, and generally cure the disease, without the assistance of bark, or danger of relapse; yet they do not preclude the use of the bark, but perform the cure with less bark, and without leaving abdominal obstructions. Here their effects are similar to opium, but much more to be relied on.

In obstinate cases, where the bark alone has failed in the cure of agues, our medicines, either joined to the use of the bark, or alone, has quickly effected a perfect cure.

The bark has been found an excellent remedy in pure spasmodic diseases; but as it is said to be hurtful in all inflammatory cases, we must take care that such a state of the body does not accompany the disease, when we order the bark.

The bark, though a bitter, astringent, and antiseptic medicine, cannot be employed successfully in the cure of the scurvy, so many bad symptoms in this disease forbid it; in which our medicines are specifics, and accompanied by them may be safely employed.

Our medicines are not like most of the preparations of *antimony*, uncertain in their operation, and unmanageable in their effects, but constant and uniform;

uniform; the reins being always in the hands of the physician to bridle them at pleasure.

They agree with the most esteemed preparations of antimony, in promoting diaphoresis, vomiting, and purging, and in the cure of certain scrophulous distempers, and deffodations of the skin; and excel them in all cases when a copious urinary discharge may promote a favourable crisis; and seem parallel in their febrifuge qualities, without the inconveniences sometimes attending the exhibition of antimony.

Although it is certainly, and not without reason, that antimonials which have long been found useful in all these diseases so often mistaken for the scurvy, have been lately recommended in the cure of the scurvy also; yet it is reasonably to be expected that medicines like ours, possessing all their good effects, without any of the inconveniences attending the exhibition of antimony, should supersede its use; but when properly combined with correctors, not exposed to decomposition, and when taken into the stomach, and blended with the animal juices, antimony is an efficacious medicine.

Our medicines possess in an eminent degree some of the best effects of *mercurial* preparations; as in promoting circulation throughout the animal system, and most of the fluid secretions. Like mercury they remove obstructions in the excretary

glands, in scrophulous and cutaneous cases; and in obstinate chronic complaints, much exceed mercurial remedies, particularly such as salivation has failed to remove.

Like mercury they do not depend upon the quantity of sensible evacuation; often curing inveterate foulnesses of the skin, without any other sensible excretion, but a gentle increase of perspiration and urine.

A virulent gonorrhœa has been frequently cured by an injection made with our medicines, when calomel, white precipitate, and white vitriol have failed.

In the *rabies canina*, like mercury, they have had the happiest effects; and what is very remarkable, that, in cases of this sort, their good effects have always been attended with a sensible evacuation of saliva; and have been equally successful with mercury in the tetanus, or locked-jaw, and, in fact, much more so in both.

In hæmorrhages, and in putrescent and scorbutic diseases, where mercury would exasperate the symptoms, our medicines are next to infallible in the cure, particularly in the sea-scurvy, when joined to the liberal use of vegetable acids, bitters, and astringents.

Like *opium*, our medicines, in their internal and external effects, vary in different constitutions, with respect to their sedative, anodyne, antispasmodic

modic effects; but in general are more uniform in their operation, and more constant in their effects. But it must at the same time be acknowledged, that they in general possess all those effects in an under proportion, except the antispasmodic.

Their good effects in intermittents, are similar to opium, and bark combined. In active inflammation, to opium and mercury, and in the small-pox before the eruption and after, they allay the pain of suppuration, and promote the ptyalism.

In allaying the tormina and tenesmus, and obviating the laxity and debility of the bowels in the dysentery, their good effects can only be exceeded by opium; which they otherwise surpass in being unattended with any of its inconveniences; and which inconveniences we have found them to correct when joined with opium.

Their use in combating the symptoms, and counteracting the effects in different spasmodic affections, infinitely exceed opium, with all its auxiliary combinations.

So far from being improbable, we have reason to conclude, from judging of its effects, that they possess a great majority of the beneficial effects of opium.

Opium has been recommended, when dissolved in brandy, by Dr. Milman, for the cure of the sea-scurvy; probably from perspiratives being found beneficial in the cure of that disease:
the

the trial of our medicines in this hideous deplorable disease, would soon supersede the use of it, or any other of this class.

The qualities of *camphor*,—a drug that modern practice lays much stress upon, is to be found also in our medicines, whether we consider it as a medicine efficacious in malignant fevers, acute or chronic disorders, proceeding from an acrid or putrescent state of the juices. Like camphor, they correct acrimony, expel morbid matter through the cutaneous pores, and prevent an inflammation or sphacelus, where there is previously any disposition thereto; by strengthening the vessels, and restraining hæmorrhages happening in acute fevers.

Or, as an antispasmodic; in which last, our medicines have infinitely greater advantages than even in the preceding intentions, where the effect of camphor, from not being of any long duration, can never be justly esteemed a rival in spasmodic affections.

Nor *musk*, either as an antispasmodic or febrifuge; which combined with opium in a tetanus, and mercury in the rabies canina, by Dr. Wall, has been found a medicine of considerable efficacy, which in these diseases had often baffled the force of other medicines; with him it produced the happiest effects in two persons labouring under a subfultus tendinum, extreme anxiety, and want of sleep, from the bite of a mad dog; who were relieved by taking

two

two doses of musk, each of sixteen grains. Like ours, medicines in cases where this medicine could not be administered by the mouth, on account of strong convulsions and hiccups, attended with the worst symptoms, were removed, when injected by clyster.

Notwithstanding which, we are told in the *Essays and Observations*, physical and literary, that a surgeon in Jamaica, who depended on opium and musk in the tetanus and locked-jaw, had lost some of his patients; who changed his practice by resorting to mercury, which answered his expectations. His method was rubbing in mercurial ointment, and the symptoms went off, when the mouth was affected; which corresponds with the effect of our medicines on similar occasions, in a great degree.

Dr. Home informs us, that *flowers of zinc* have been much used, since Gaubius's detection of the quack remedy used by Ludemanus: he was encouraged to try it on several hospital patients as an antispasmodic remedy; the success of which justified its arrangement in the second class, as related in the introduction to this work, where it seems to be nearly on a par with *cantharides* in blisters, who exhibited them from two or three grains to forty. Its good effects in the epilepsy, and as an antihysterical, entitled it to the appellation of an antiepileptic.

Zinc

Zinc has been tried by Dr. Blane, in cases where there could be little or no ambiguity with regard to the efficacy of the medicine, as the disease had lasted from two to six months; and there was no other circumstance of change in the situation or treatment of the patients that could account for their recovery.

Flowers of zinc two grains, thrice a day, were given. In some it produced the desired effect, without the least sensible operation in the stomach and bowels. If this dose did not stop the fits after a few days trial, it was increased to three grains, which in some would produce a little sickness. He found that four grains ruffled the stomach a good deal; but if the patient was gradually habituated to it, even more than this may be given without any inconvenience. The cases to which he thinks this medicine adapted are, those that have extremely distinct remissions, with no symptoms of bile, or any local affection. He found ginger and capsicum useful additions in hot climates to the flowers of zinc. Mr. Telford, surgeon of the Yarmouth, informed him that he had cured several intermittents that had baffled the bark by means of salt of zinc; that is, white vitriol in doses of five grains every four hours, in the intermission.

The ague has been so formidable a disease, that while the whole *Materia Medica* has been rumaged by physicians for a remedy, and the vulgar
referred

resorted to many expedients for their relief, religion in some countries has been invoked, and refuge taken in charms distributed to her votaries, combined with so many injunctions, that when the patient was not cured, his non-compliance with the conditions was the cause ; when nature performed it, the charm bore away the credit.

The principal of the remedies resorted to by the vulgar are brandy, nutmeg, brimstone, oyster-shells, paper, usquebaugh, with lemon-juice, wine and egg, with a spoonful of houseleek, plantain-juice, spirit of turpentine, juice of rue, juice of nettles, juice of groundsel, decoction of cinquefoil, decoction of sparemint in milk, infusion of horse-radish in stale beer, strong beer in which broken glass, heated red hot, has been quenched, a sea-water vomit, the snuff of a candle with nutmeg, the juice of a large lemon, bay-leaf powder, the bark of the ash, salt of wormwood, mistletoe of the oak, the inner bark of the elm, calamus aromaticus, gin and mustard seed, a common spider wrapped up in a raisin, five grains of cobwebs.

External applications—a hard egg, split and applied hot to the wrists, camphor and saffron to the pit of the stomach, the back bone rubbed with garlic, spiders and tobacco rubbed, or applied to the wrists or feet, mouse-ear and shepherd's-purse the same, sun-due, wall-pepper, and other plants with vinegar and salt.

Arsenic

Arsenic in small quantity, has been known to be very powerful in removing the ague; a remedy which incautiously used, would prove worse than the disease, and often productive of the most alarming symptoms.

Arsenic has for many years been used by an Irish family of the name of Plunkett, externally, in the cure of cancers. Mr. Le Febure is the reputed introducer of a solution of the white crystals of arsenic, for internal use in the cure of cancers.

In Lincolnshire, and the fenny counties, arsenic has been, it is said, successfully employed in the cure of agues; under the name of *the ague drop*, *the arsenic drop*, and *tasteless ague drop*.

Dr. Fowler, of Stafford, in the *Medical Reports*, directs, that 64 grains of arsenic, reduced to a very fine powder, and mixed with as much fixed vegetable alkali, should be added to half a pound of distilled water in a Florence flask, placed in a sand heat, and gently boiled till the arsenic be completely dissolved; half an ounce of compound spirit of lavender to be added to the solution when cold, and as much distilled water, as to make the whole amount to a pound.

This solution taken in doses, regulated according to the age, strength, and other circumstances of the patient, from two to twelve drops, once, twice, or oftener, each day, has been found a safe and efficacious

cacious medicine in the cure of agues and remitting fevers, and periodic head-achs.

Mr. Milner, professor of chemistry at Cambridge, we have been informed, prepares a very pure *sal arsenici*, readily soluble in water, which has been employed with great success by practitioners in the neighbourhood.

Macquer, Beaumé, Morveau, &c. particularly the former, who is the acknowledged discoverer of the true arsenical neutral salt, prepared by distilling equal parts of white crystalline arsenic, and purified nitre powdered, with a well regulated heat, until the retort was red-hot, and no more vapours of nitrous acid would rise. In the retort a saline mass remains, white, compact, and fixed; from which, after a solution in hot water, filtration, evaporation, and crystallization, may be obtained; beautiful quadrangular, prismatic crystals, terminated at each end by a quadrangular pyramid; the sides of which correspond with those of the prism. *This is a genuine arsenical neutral salt.* This process I have successfully executed on a large scale, to serve certain manufactories, &c. who apply it in a commercial view.

The extreme activity of the reguline, or metallic part of *antimony*, a quantity too minute to be sensible on the tenderest balance, is capable of producing the most violent effects, if given dissolved in the vegetable acids, or in a soluble state. The
violent

violent effects which antimony produces in certain circumstances have been ascribed by Neuman, Hoffmann, and Stahl, &c. to its participating of an arsenical substance. But the chemical properties of antimony, alledged in proof of this supposition, are by no means characteristic of that poisonous mineral; and its operation in the human body is extremely different.

The most violent antimonials are rendered inactive by means which do not lessen the deleterious quality of arsenic. The inactive are rendered violent, by operations in which arsenic would be dissipated; and some act with violence in far less doses than pure arsenic itself.

Sulphur, which restrains the power of *mercury* and the *antimonial regulus*, remarkably abates the violence of *arsenic*; and it is not improbable that *balsam of sulphur*, and *hepar sulphur*, properly managed, would prove the best antidotes in counteracting and neutralizing the poisonous effects of both these, and the *corrosive sublimate of mercury*, which has also been accused of being adulterated, or otherwise combined with arsenic, but on no better foundation.

Mercury, or the preparations of it, although they are found salutary in sundry cutaneous deffodations, and impurities of the blood and juices, vulgarly called scorbutic; yet they are always pernicious in the *true scurvy*, and dangerous in constitutions

constitutions inclining to this disease, where the humours are acrimonious and colliquated, and diffused to a putrescent state. In such circumstances mercurial medicines are apt to operate with violence; small doses have occasioned high and lasting salivations: the removal of these accidents are to be attempted by clysters, purgatives, and diaphoretics, or such other means, consistent with the patient's strength and the particular symptoms, as may procure a speedy revulsion from the salival ducts.

Boerhaave has recommended *sal ammoniac*; and we are authorized from experience to pronounce it an useful medicine in some obstinate intermittents. In the East Indies, the Tellicherry bark, or what is there called the *Cort. de Pala*, has been found very beneficial in removing agues of long standing. The bark also of the mahogany-tree, which resembles much the Peruvian bark, and is often fraudulently mixed with it, is said to have been found serviceable in *Jamaica*, for the cure of intermittent fevers.

Before the discovery of the Peruvian bark, the cure of agues was generally attempted by bitters; such as chamomile, centaury, gentian, orange-peel, zedory, &c. These bitters, together with fixed alkaline salt, are still in great esteem with some physicians, who entertain prejudices against the

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bark;

bark; all of which, it is to be hoped, will be removed.

We have already mentioned the success of zinc, in the hands of Dr. Blane, and Mr. Telford, the surgeon of the Yarmouth, in the form of flowers, and vitriol of zinc.

I have just now received a pamphlet, published by a Mr. Samuel James, surgeon, containing observations on the bark of a particular species of the willow, common in England, &c. It is styled by Ray, in his Synopsis, *salix latifolia*, broad-leaved willow, and is thus described in the botanical arrangement of Dr. Witherington.

The leaves of the *salix latifolia* are egg-shaped, downy on the under surface, veined at the edge, with little teeth towards the end: the lower buds send forth leaves, the upper buds catkins without leaves; bark rough and grey; the wood smooth, soft, and flexible: it is converted into charcoal, for making gunpowder, and drawing pencils. The Laplanders make a sort of leather of the bark, which they manufacture into gloves: they give a decoction of the leaves for the heart-burn. The flowers are particularly grateful to bees, and the leaves are eaten by horses, cows, goats and sheep: the purple emperor butterfly, papilio iris, the highflie moth, and the copper underwing moth, feed upon it.

This tree grows frequently fifteen or twenty feet high;

high; almost any kind of soil will suit it, but it delights most in a cold, clayey, humid situation. The best mode of propagating it is by cuttings of two or three years growth, and of about three feet long, which should be stuck half way into the ground in the latter end of autumn, or beginning of spring. It grows rapidly, extending to the height of eight feet in three years. In some countries, where there is a scarcity of oak, the bark of this tree is used for tanning of leather, and dying. The bark is easily procured during the summer months, either from the tree itself, or from toppings of from one to three inches diameter. When it is taken off the tree, it should be placed under a shade where the rain cannot reach it, and the air has free access. In this situation it ought to dry gradually. The author has found it more astringent, and of superior efficacy to the *cortex Peruvianus*.

It is not only efficacious in the cure of *agues* and intermittent fevers, but also where the tone or strength of the system has been suddenly reduced in consequence of large collections of pus, hæmorrhages, *fluor albus*, colliquative diarrhœas, &c. as well as in several scrophulous cases; and in a single instance, where the tone of the stomach was so entirely destroyed from hard drinking, that the patient could not, at any one time, eat the quantity of half an ounce of meat.

The author informs us, that Mr. E. Stone, a

clergyman of Chipping-Norton, in the County of Oxford, communicated to the Royal Society in the year 1763 several particulars relative to the use and importance of this bark, as a substitute for the Peruvian bark. But notwithstanding this, it had not made its way into our druggists' shops, &c. &c.

*Mode of exhibiting the ANTIFEBRILE MEDICINES
in INTERMITTING FEVERS.*

IN the cure of intermittents much benefit is derived from early recourse being had to medical assistance. The disease, on its first attack, is with difficulty distinguished from other fevers, and it gains additional strength from its duration.

On the approach of the cold fit, as soon as a person is seized with the shivering or chills of an ague, administer the following draught:

Take of any wine, red or white, ij $\bar{3}$. to iv $\bar{3}$.

Antifebrile powder, No. 1, xx grains.

Powder of gum-arabic, x or xv. grains.

Shake them well together, and let the patient drink it off without suffering the antifebrile powder to subside, and immediately go to bed and keep himself warm.

Take

Take of red or white wine, 4 pints.

Antifebrile powder, No. 1, iv 9.

Aromatic tincture, 4 3.

Heat one half of the wine scalding hot, and dissolve the powders in it, shaking them well together in a bottle capable of holding the remainder of the wine, which is to be added warm to the solution.

Give an ounce of this solution warm every one or two hours, according to the urgency of the symptoms.

If the patient vomits, assist it by giving chamomile tea, with a table-spoonful of the solution in the first cup, taken after each return of the puke, until the stomach is cleansed. Cover the patient up, and encourage a diaphoresis, by continuing the doses of the *antifebrile solution* at the same intervals as before, or as occasion may require.

If costive, or the antifebrile medicines do not induce a stool, give the following clyster, taking care that the patient does not get cold either when administered or when at stool.

Take of tinctura sacra, i 3.

Antifebrile solution, ij 3.

Olive oil, i 3.

Common decoction, half a pint, mix and inject.

Should the antifebrile medicines promote a

N 3 sweat

sweat in the first instance, encourage it by a liberal use of mustard-whey, in small, but frequent draughts.

In which ever way these medicines operate, the general effects, if given in the cold fit, will be an abatement in the rigors, spasm, and attendant symptoms, and probably remove the fit. In the hot fit, they give sensible and immediate relief to the head, abate the violence, and lessen the duration of the fit; take off the burning heat of the fever, promote sweat, with an agreeable softness of the skin, and much more copious than when taking the bark, or any other medicine.

When the first attack of an ague is mild, scarce any medicine is requisite during the hot fit; but when protracted to any length, or attended with alarming symptoms, the foregoing treatment will be successfully attended with the happiest effects.

And in most cases the febrile virus totally expelled, usually without any danger of a relapse, or generating into any other disease; and that without any previous preparation of the body, which the rapid advance of those deleterious diseases in hot climates scarcely admits of.

Much danger is to be apprehended when agues seize upon the patient under the form of a continual or remitting fever, attended with violent symptoms, especially a delirium; from whence that state is generally denominated the frenzy fever. This
fever,

fever, unless brought to a speedy remission, is attended with considerable danger; the usual remedies are blisters and antimonials.

If large quantities of blood be repeatedly taken, by mistaking the disease, or not attending to the method of cure laid down under the head *bilious, putrid, and malignant fevers*, its obstinacy and fatality are greatly increased. Profuse bleedings are more particularly hurtful, when symptoms indicate a speedy remission of the fever, or its termination in a regular ague, which commonly is prevalent at the time.

These medicines, as much the product of Nature as Chemistry, are equally uniform in their operation: if the stomach or bowels stand in need of cleansing, the fordid fomes of the disease acted on by the antiacid powers of the medicine will operate by vomit, or stool, or both, according to the presence of the morbid acrimony in the stomach, or intestines; if absorbed into the system, by perspiration or urine, or both.

Those who prefer previous evacuation, and are averse to simplifying the method of cure as here laid down, may be assured that such procedure, though it may retard, will not otherwise lessen the efficacy of the antifebrile medicines; and should an attachment to a well regulated practice induce them to give the bark also, whenever a remission is succeeded by no bad symptom that forbids it, they

may with safety and success throw in the bark, just as if our medicines had not been given.

If we could presume to press our mode of practice on gentlemen of this way of thinking, we would, for our mutual satisfaction, recommend a trial of them alone, merely to ascertain the qualities of the medicines proposed ; which though they may not be injured by the junction of the bark, and other medicines salutary in the cure of intermittents, yet their value cannot be sufficiently ascertained, but by administering them alone.

It has been judiciously remarked by Dr. Lind, when the ague was stopped by the bark, after the first or second fit, as in his own case, and that of two hundred of his patients, neither a jaundice nor a dropsey ensued. When the bark could not be administered on account of the imperfect remissions of the fever, or when the patient had neglected to take it, either a dropsey or a jaundice was the certain consequence ; and the degree of violence with which it attacked was in proportion to the number of the preceding fits, or to the continuance of the hot fit. By every paroxysm the dropfical swellings were visibly increased, and the colour of the skin rendered of a deeper yellow.

When the fever continued a few days without remission, the belly and legs generally swelled ; a violent head-ach and vertigo, also, generally distressed the patient ; so that some, even after the
fever

fever had left them, were not able to walk across their chamber for a fortnight or three weeks.

All this melancholy catalogue of symptoms may be obviated by attentively pursuing the mode of practice already described, and proceeding as follows:—

An ague cannot be stopped too soon; the more severe it is, the more urgent the necessity of applying the remedy; as the constitution is always found to suffer least, where the ague is easily removed.

A dropfy, jaundice, ague cake, and diseases of the liver, will commonly be obviated by this method: but as improper treatment, or the neglect of the patient, or those about him, together with the malignancy of the disease, may induce, or cause a degeneracy of the fever into any of those concomitant maladies that frequently associate with the ague in hot climates, oftener than in more temperate regions, we shall enumerate their symptoms and method of cure.

D R O P S Y.

BEFORE this disease is perfectly formed, the patient is generally said to labour under a cachexia ; but when it increases, so as to cause a general accumulation of lymph in the cellular system, it is called leucophlegmatia, or anasarca. When there is a collection of watery fluids in the abdomen, it is esteemed an ascites ; when in the scrotum, hydrocele ; when in the breast, hydrops-pectoris, or hydrothorax.

The dropsy is a preternatural collection of water or serum in some particular parts of the body ; attended for the most part with swelling, thirst, difficulty of breathing, and a discharge of very little urine.

In most dropfical cases the legs swell and pit towards night, the appetite decays, the face either becomes bloated, or grows thin, emaciated, and pale ; and a slow fever and thirst attend. If a dropsy happens after large hæmorrhages, long continued fevers, or an abuse of the bark in intermittents, purge sparingly : much dependence is here to be laid on bitters, chalybeates, and deobstruents. It is well known, that obstructions of
the

the different thoracic and abdominal viscera, especially of the liver, are the general cause of a dropfy.

Take of the antifebrile powder, No. 1, v grains.

Conserve of roses, i℥.

Currant-jelly sufficient to make a bolus.

Take of cream of tartar, ij℥.

Cows' milk, one pint.

Water, two ounces.

When the milk comes to boil, add the cream of tartar, previously dissolved in the two ounces of water boiling hot to the milk. If the water should not have dissolved the whole of the cream of tartar, add it altogether to the milk as it is, in which it will be totally dissolved; separate the whey from the curd.

Give the bolus once, twice, or thrice a day, according to the urgency of the symptoms, and let the patient take, in the course of the day, from two to three pints of the cream of tartar whey.

In situations where milk cannot be obtained, dissolve six drachms, or an ounce of cream of tartar in three pints of water, and make it palatable with a little wine, and a sufficient quantity of sugar, or syrup of orange-peel; or,

Take

Take of cream of tartar, i $\bar{3}$ ss.

Pure soft water, xxiv $\bar{3}$.

Cassia lignæ, ij $\bar{3}$.

Bruised mustard-seed, iv $\bar{3}$.

Syrup of ginger, a sufficient quantity to make the solution palatable. Dissolve the cream of tartar in the water over the fire, and infuse the cassia lignæ and mustard-seed for a few hours in the solution; when sufficiently impregnated, strain off the clear fluid, and sweeten to the palate with syrup of ginger.

Take of exiccated squills, iij grains.

Of antifebrile powder, iij grains.

Mucilage of gum-arabic, a quantity to make a bolus.

Administer this bolus night and morning.

The quantity of squills in the bolus may be occasionally increased, and, if necessary, be reduced or omitted now and then. The solution of tartar may be taken from a pint to a pint and an half, or a quart a day; particularly where the squills are omitted in the bolus; when even the whole three pints may be taken in the course of twenty-four hours; observing never to give more than four ounces at a time, and from three to six hours between each dose.

The antifebrile bolus and solution of tartar generally cures in two or three days, but sometimes
not

not under two or three weeks, by urine and stool: the squill bolus generally in a shorter time; mostly by vomit, and sometimes by stool and urine also.

In all dropfies the diet should be dry and solid; liquids should be sparingly used, and these should consist of sound wines, or medicated beers, in order to strengthen the solids, and to promote the renal discharges.

JAUNDICE.

The jaundice is an universal yellowness tinging the skin, chiefly observable in the whites of the eyes; owing to the bile mixing itself in too great a proportion with the blood: it may be occasioned by obstructions, viscid bile, small biliari calculi, or spasms in the biliary ducts, inflammation, or schirrus of the liver.

Nature has made a great apparatus for the formation of the bile; hence its great use in the animal œconomy, and the diseases consequent on its visciduity, which are apparent in the lives of the sedentary, by costiveness, &c. as the contrary happens to free livers; where the salts being exalted, diarrhœas and fevers frequently attend.

The symptoms of a jaundice are, inactivity, lassitude, anxiety, sickness, oppression at the breast, difficult respiration, pain about the pit of the stomach,

stomach, dry skin, with an itching, costiveness, hard, white, or greyish stools, yellow and high-coloured urine, with a bitter taste in the mouth. A jaundice, arising from an obstruction in the gall-bladder, is not so bad as that from a schirrus-liver.

The existence of the biliari calculi in the gall-bladder, may be suspected from a fixed pain in the region of the liver, which is sometimes, though not always, succeeded by the jaundice.

The diet should be attenuating.

Take antifebrile powder, No. 1, one packet.

Gum ammoniacum, ij ℥.

Oil of juniper, xx drops.

Soft extract of licorice, iij ℥.

Powdered bark of the root of mezereon, i ℥.

Make this into one mass, and divide it into twelve parts, of each make five pills; two to be taken in the morning, and three at night.

Take antifebrile wine, two pints, (see page .)

Madder root, } of each j ℥.

Turmeric root, }

Of the bark of mezereon root, } of each j ℥.

Of the bark of saffrafras, }

Compound spirit of lavender, iij ℥.

Digest for two or three days, and give from two drachms to half an ounce of this deobstruent wine twice a day (when the above deobstruent pills are not taken) in any agreeable vehicle.

If the symptoms indicate the existence of a stone in the gall ducts—in this case opium and a warm bath should be resorted to. Gentle purgatives, as rhubarb and calomel are useful, by increasing the motions of the intestines, and soliciting a flow of the bile, or the free use of sal diureticus. If attended with a fever, the antifebrile powder, No. 2, and rhubarb should be the purgatives employed. If the disease proceeds from a sluggish and viscid bile, vomits of the antifebrile powder, No. 2, joined to ipecacuanha, should be added; and bleeding, when the strength of the patient will bear it.

Take of antifebrile powder, No. 2, x grains.

Rhubarb, xx grains.

Mucilage of gum-arabic sufficient to make a bolus;
adding extract of chamomile, jʒ.

Take of antifebrile powder, No. 2, xv grains.

Ipecacuanha, x grains.

Extract of chamomile, jʒ.

Mucilage of gum-arabic, a sufficient quantity to
make them into a bolus.

The first is the purgative, and the second the vomitive bolus, which we recommend when a fever attends.

INFLAMMATION OF THE LIVER.

THE hepatitis, or inflammation of the liver, is a very common disease in hot climates. It may be known by a pungent pain in the region of that viscus, shooting upwards to the throat and clavicle, with a difficulty of breathing. The patient spontaneously applies his hand upon the right side, the seat of the liver, as it were seeking for relief: it is generally accompanied with a high fever, loss of strength, a quick pulse, and tension of the hypochondrium; a yellow skin, saffron-coloured urine, and costiveness.

The livers of those who died in the East Indies were found in a putrid state, resembling a honeycomb. On the first attack the patient should lose blood, and the part should be fomented with a proper disaigent, or a blister applied on it. When the fever is somewhat abated by bleeding, and a gentle purge or clyster has been administered, recourse should be had to mercury, rubbed on or near the part, with the use of calomel, or other mercurials, to raise a gentle salivation; to be continued for fifteen or twenty days.

A salivation generally cured the disease of the liver, if the spitting was brought on before the
matter

matter was formed. In some the mercury produced looseness, which also cured the liver: in inflammations of the liver, when it adhered to the peritonæum, which was generally the case, and a tumor appeared externally, it was several times opened with success.

On the very first appearance of an inflammation of the liver, and as soon as the first blood is drawn, administer the antifebrile medicines as follows, which are highly anti-inflammatory :

Take of antifebrile powder, one packet of No. 2.

Hot wine, one pint, or xvj ℥.

Powdered bark of the mezereon root, i ℥.

Syrup of lemon juice sufficient to make the mixture palatable.

Let the patient take an ounce of this mixture every two hours, till the medicine operates upwards or downwards.

Take of powdered bark of the mezereon root, i ℥ss.

Antifebrile powder, two packets of No. 2.

Crystals of acetated quicksilver, i ℥.

Soft extract of logwood, a quantity sufficient to make them into a mass, with ij ℥. of powdered gum-arabic ; divide it into sixteen parts, and make each part into five pills.

Take of the antifebrile powder, No. 2, two packets.

Strong ointment of quicksilver, iij ʒ.

Olive oil, a quantity sufficient to grind the antifebrile powder into an ointment of the consistence of the mercurial ointment, to which it must be added, and both blended together for use.

When the first passages have been cleansed by the antifebrile mixture, let the patient enter upon a course of the antifebrile mercurial pills and ointment; taking two of the pills in the morning, and three at night; and the ointment rubbed on or near the seat of inflammation, that the mouth as speedily as possible may be affected, and the salivation kept up moderately, until the inflammation is removed, and the patient relieved by an abatement, if not a total cessation of the most urgent symptoms.

With respect to bleeding, the pulse is the best barometer, attending at the same time to the strength of the patient; repetitions are better than taking too much at once. When the evacuation is by the salival glands, we are not to expect to increase it by enlarging the dose, but by subtracting the antifebrile medicine from the mercury; and if the symptoms abate, it would be imprudent to make any alteration in the medicine, or manner of administering it; as it may be productive of very happy effects without any sensible

sible evacuation, other than by urine and perspiration.

For which reason the salivation should not be encouraged to any considerable height, but restrained within due bounds, by interposing a cooling purge, discontinuing the mercurials, or even by applying a blister.

The same reasoning is as applicable to the first indications of cure; that in reducing the febrile impetus within due bounds, the pulse must not be suffered to flag or sink too low; no more than we would extinguish the inflammation, or expel the morbid cause, by too great evacuation, but keep up the strength of the patient by proper cordial medicines (such as our own), and a due attention to a restorative diet, fit for a debilitated constitution.

If the *mezereon* bark should excite the antifebrile pills to vomit the patient, which is not improbable in some habits, instead of uniting it with them, give it in a decoction, two drachms to a quart of water; of which make four doses, dissolving in each half a drachm of extract of licorice, and adding one drachm of any aromatic, or stomach tincture to each dose when administered, to reconcile it to the stomach. The *mezereon* is here added on the authority of Dr. Donald Monro, of London, and Dr. Home, of Edinburgh, who have found it the

most powerful deobstruent in resolving schirrus tumors, and removing glandular obstructions.

For removing obstructions, and resolving an induration of the spleen or other viscera, commonly called an *ague-cake*, we may rely on a decoction of the bark of mezereon and the compound ointment of quicksilver, prescribed for the inflamed liver, managed so as not to affect the mouth, as this complaint does not need a discharge from the salival glands, usually yielding to the mezereon and other notable deobstruents, &c.

If *hectic* symptoms attend, small repeated bleedings will be proper in the beginning, regulated by the strength of the patient. The diet should consist of mild, light, nourishing food, chocolate, a milk diet, especially butter-milk and goat's-whey, when they can be procured. Light, cold, infusions of the bark, evening and noon, tend to remove the fever and strengthen the habit. If the vessels are not tender, and no preceding hæmorrhage contra indicates, a vomit of ipecacuanha twice or thrice a week, with a moderate dose of the antifebrile powder, No. 1, at night.

If *hæmorrhages* attend this disease, be cautious how you order attenuants, aloetics, volatiles, and chalybeates; the acid demulcent methods will, in this case, be the most proper. The diet should be cooling and balsamic; barley-water, rice-gruel,
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for drink, milk and water, butter-milk, sago, jellies, tincture of roses, and claret wine, may be sparingly allowed. No disorder requires greater care to avoid all strong heating acrid things. Bleeding is necessary, if the pulse will admit it.

If the *black vomit*, or *black stools* supervene, a disease that often follows other hæmorrhages, and that scorbutics are most subject to, the anti-hæmorrhagic medicines, which are used in other hæmorrhages, seem to be indicated; as emulsions of nitre, dragon's-blood, gum kino, allum-whey, &c. which may be all superseded by the *vitriolic acid*. Gentle laxatives by the mouth and anus, as castor-oil, rhubarb, and calomel, are highly necessary; emetics are esteemed hurtful.

This is an acute disease of quick termination, without remarkably raising the pulse: attended with severe gripes and great debility, frequent fainting, and a considerable loss of blood; which, from its black colour when discharged, has been mistaken for putrid bile, by Hippocrates, Boerhaave, Van Swieten, and Morgogni, all of whom thought *atra bilis* was the cause of this disease.

It proceeds, when symptomatic, from obstruction of the liver, spleen, stomach, and other viscera; and when it appears at the latter end of a disease, is justly reckoned very fatal; but it is sometimes idiopathic, and even then has been found very dangerous.

It is distinguished by the name of *malaene*, by Dr. Home (and others), who found bleeding useful in the idiopathic malaene; and also, that the vitriolic acid was a specific in the cure. It seemed reasonable to clear the intestinal canal, as all foetid matter and pressure of the fæces, which might prolong the hæmorrhage, is thereby removed; for which purpose he used the infusion of tamarinds, as a gentle antiseptic laxative. The vitriolic acid appeared to him the best antihæmorrhagic, being antiseptic, and powerfully sedative, and also a strong astringent: these effects entitled it to a trial, and its great success warranted the experiment, and justified his reasoning. To prevent its exciting gripes, of which he was afraid, and to enable him to give it in a greater quantity, it was mixed with mucilage of gum-arabic, which effectually covered the acid and irritation.

He shunned opiates, as they would have shut up the matter that nature was carrying off by diarrhœa, and would in this way have increased the putrescency. He gave of the acid elixir of vitriol, twenty drops in four ounces of water, for a dose, three times a day: at other times one of these julaps:

Take of weak spirit of vitriol, ij ℥.

Water, ij ℥.

Syrup of dry roses, ii ℥.

Or conserve of roses, ℥ss.

Take

Take mucilage of gum-arabic and water, of each $\text{iv} \frac{3}{4}$.

Weak spirit of vitriol, c drops.

Syrup of marshmallows, $\text{i} \frac{3}{4}$.

Of the first julap a small spoonful every four hours, of the last an ounce every three hours, may be given. He found that he could give double the quantity of acid with the gum-arabic. In phthisis pulmonalis, he was not so successful in his experiments with the vitriolic acid, where there seemed good reason to expect it; from its astringency and strong antiseptic power, it may sometimes correct the laxity of the solids, and the purulent dissolution of the fluids; but was found strongly to tend to promote purging, even though joined to the mucilage of gum-arabic, accompanied with opiates, which has here certainly a bad effect.

If this treatment of the black vomit does not speedily succeed, in hot countries there is no room for delay; and it will always be the safest way when that is the case, to proceed as directed under Dysentery and Cholera Morbus: the medicines there ordered will be equally fit in the black vomit, but must not be given in conjunction with the vitriolic, or any other mineral acid, nor with alkalies.

Dr. Blane deems the *black vomit* the most dangerous symptoms of the *yellow fever*; and ob-

serves, that, on examining the dark flakes, resembling grounds of coffee, it seemed to him, blood which had oozed from the surface of the stomach, a little altered; and that at the same time the stools grew black, and the urine frequently of a very dark colour.

Some further Particulars of the BILE and the Application and Effects of ACIDS in FEVERS, equally applicable to the Cure of the SCURVY, &c.

* WHEN we consider the common theory of digestion, the nature of our food, the alterations it undergoes in the stomach, and the phenomena it occasions there, these are circumstances so agreeable to the doctrine of fermentation, that it seems now to be generally applied to the first changes of our aliment.

But the experiments that Dr. Rush made upon the contents of his own, and of his friend's stomach, tend to persuade us that this fermentation always proceeds to the acetous stage, and that there is a constant generation of acid from digestion.

As soon as the acid liquor passes out by the pylorus, it must meet with the bile in the duodenum, the known effect of which is for the acid to coagulate the bile. After this operation, being neither fluid itself, nor miscible with the fluids of

* Dr. Macleuz on the bile,

the

the intestines, it cannot be absorbed, but must pass off with the fæces.

But in cases of great redundancy of bile, the proportion between it and the acid will no longer be preserved; and consequently there we may see the absorption of bile, unless it is carried off by an increased intestinal discharge.

Nature, in the coagulation of the lymph of the bile, separates a serum from it, which is found to be its most antiseptic part; and by this decomposition that takes place in the intestines, the putrescent coagulable matter is left to the alvine secretion, while the other is taken up by the absorbents, and applied perhaps for useful purposes in the animal œconomy.

It is no doubt agreeable to the wisdom of Nature, that she should, by the same contrivance, separate from the mass a matter which was growing pernicious, and prepare one that should be useful; and accordingly she has taken the greatest pains to make the quantity of acid in the stomach, at this period, bear a proportion to the redundancy of the bile, that so the operation might be completed.

She covers the earth with a quantity of acid or acescent fruits, as tempting to the eye as they are delicious to the palate. She diminishes our appetite for hunger when she encreases that of thirst; and thus, not contented with alluring us to pleasure,

sure, she seems willing to determine our choice of food by necessity.

At the same time she diffuses over us an indolence and inactivity that, while they make a more substantial aliment unnecessary, deprive us of an inclination to seek it. Without the artificial distinctions of society, neither bread nor meat could be obtained, except by the labour of the individual; but the fruits, in such climates and seasons, present themselves spontaneously.

And what we collect from tracing the plan of nature is farther confirmed by experience. A most accurate observer* assures us, that the people who kept the vineyards in Minorca, and subsisted chiefly on grapes, escaped the disorders of the hot season. Sir John Pringle has made a similar observation.

It has been frequently remarked, as characteristic of English men, that they are prone to excesses of every kind; virtue, vice, frugality, profusion, and every peculiarity of character, are said to grow to a more extraordinary height in this than in any other clime.

But their free spirit rejects the appearance of constraint, even in the most ordinary matters. In this favourable climate, and in constitutions which retain their native vigour, such excesses are fol-

* Dr. Cleghorn.

lowed by a punishment so tardy that it is frequently confounded among the natural effects of old age.

Our colonies, in hot climates, retain the full and free manner of living of their most robust ancestors. They imitate, in this respect, the less polished, but more hospitable state of their parent country; before a necessary œconomy and attention to more elegant pleasures, and the care of a debilitated body had introduced a greater moderation.

They seem as though they were yet new in their settlements, and not to have discovered the modes of living which are best adapted to their situation. In general these are regulated by fashion, and are not therefore always strictly rational.

Yet I believe, in every country which has been long inhabited, they will be found to bear a certain relation to the nature of the climate. Its temperature affects most remarkably the nervous system, and alters therefore the state of our appetites, which is always relative to the conditions of this system.

And practices, which are suggested first by instinct, are continued from an experience of their utility. The posterity of the Goths, who settled in Italy, observe, through habit and inclination, a temperance which the northern descendants of
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the same people feel the greatest pleasure in transgressing.

And universally in the civilized countries, which are subject to great heat, the inhabitants are more sober and temperate. The bounds of moderation grow more contracted, as excess becomes easier and more pernicious; yet an apology has been offered for the liberal use of wine in the Indies, on account of its strong antiseptic power.

But it should be remembered that the animal machine will form its own fluids; and that generally we are not capable of altering these immediately, but only through the intervention of the powers which form and separate them, while we change the state of the motions in the œconomy.

The first and principal effect of most of our antiseptics, is certainly exerted on the living solid; and perhaps when one is to be exposed for a short time to the influence of putrid miasmata, the supporting in the body an artificial temporary vigour, by repeated applications to the bottle, may prevent their operation.

But it is undoubtedly true that a continuance of the practice must co-operate with the heat, in bringing on a premature decay of vigour in the system. The same objection lies against a full and stimulating diet; for all great irritations must be pernicious to an œconomy which is wearing out

too rapidly, and when the action is already excessive from the stimulus of excessive heat.

The change induced on the nervous system, productive of weakness and irritability, seems to be the fundamental fault of the constitution in these climates; from which, as a common source, are probably derived the quicker circulation; the more rapid progress of the fluids in their septic degeneracy; the redundancy of bile; the disposition to violent spasmodic disorders, and to fever.

The most natural and obvious means of preventing these effects of the heat is the application of cold to the surfaces of the body. Bathing, that act of equal voluptuousness and religion in the eastern countries, and all the methods of cooling the air by evaporation, which enter into their system of luxury, the inhabitants was led to by nature, and continue from an experience of their salutary pleasure.

To be in possession of ice and snow during hot weather, requires a little more management and contrivance; but in some of the southern parts of Europe the use of these refreshments extends through almost every rank of people; and we are assured, by their physicians, that it is not only a very healthful luxury, but even a remedy of considerable importance in the disorders of their hot season.

It is surprising that the inhabitants of our American colonies did not endeavour to procure this enjoyment in their warm summers. They would find an ice in the afternoon an admirable substitute for those warmer liquors, with which they relax still more their enfeebled stomachs; and its expence would certainly be overpaid by its pleasure and utility.

The acids approach the nearest to actual cold in their effects on the œconomy; they produce a sense of coldness, relieve thirst, oppose putrescency, repress the inordinate disposition to motion in the system, and give a degree of astringency, with a gentle irritation to the parts more immediately subjected to their action, the alimentary canal, and its appendages. They have been observed to relieve that languor and faintness which are occasioned by excessive heat, when no benefit resulted from the common stimulating cordials.

Their peculiar operation on the bile, which seems to bear the strongest marks of Nature's providential care of the œconomy, has been already considered; and from that view alone, we are convinced of the necessity of using them in greater quantity whenever the body is exposed to the continued influence of great heat.

They are then demanded by the appetite, and cordially received by the stomach; for, in hot weather,

ther, and in a fever, we bear very well a quantity of acid, that would be apt, in other circumstances, to disorder the first passages.

These precautions against heat appear to oppose its effects directly ; while the spirituous liquors, and those warm spices of which the West Indians are so fond, although they remove for a time the languor of the climate, are hurtful, by adding to that irritation which the heat has carried to excess.

It is an unnatural purpose they answer, when, by rousing a feeble stomach, they enable a man to eat as much in Jamaica as he would in England.

If we were careful to preserve the strength of the system, by a way of life adapted to the climate, we should feel no occasion for their temporary use ; and they ought certainly to be reckoned amongst the *præsidia valetudinis*, whose purpose is always temporary, since it must never be supposed that a man is to be ill his whole life.

They can be of no advantage while our system retains its natural vigour, and become necessary by habit, because they destroy that vigour ; for the same reason they render the stomach less capable of bearing the action of cold and the acids, and may deprive us of these remedies, which, by lowering the two great excitement that arises from the heat, are its proper and natural antagonists.

* One of the general and most common effects

* Dr. Farr on acids.

of

of stimulating substances upon the body is, the exerting a greater impulse in the vessels of which it is composed than is usual or natural ; this the action of acids evidently produces. When applied to several of our sensible powers we perceive them in a very evident manner.

When we taste them we feel at the same time a peculiar glow that does not terminate in the place to which they are applied ; it extends through the whole system, and convinces us of their universal efficacy. The same effect is often perceived, though perhaps attended with much more important consequences, when applied to the olfactory organs ; they are used in this manner with a medicinal intention, and are often accompanied with apparent success in restoring from deliquiums to sense and vigour. Besides this, acids may be employed as caustics, and have often been used as such.

When acids are introduced into the mouth, not merely to please the palate, or affect the mere organ of sensation that is placed there, but to excite an irritation of a much higher kind, they never fail to produce the end proposed. The cuticle that invests these parts is infinitely more sensible than that of the outward skin ; hence we see a most copious flow of saliva excited upon such an application ; glandular obstructions are easily relieved, and the due tone of the vessels regularly promoted.

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How well fitted then are they, as a medicine, to resolve tumors that so often happen in these places, and to restore not only a due secretion of the saliva, but to dissolve that which is too viscid, and render it pure and uncorrupt, and capable of discharging its destined office.

Every accident that may happen to the mouth and fauces, and parts that are appendages to it, down even as low as the stomach, as they discharge a mucus or saliva, must depend for, a cure upon the purity of this secretion; for while it remains corrupt and diseased, no advantage can be expected from the application of any medicines.

Acids then act peculiarly upon these parts; they are the chief subjects of the organ of taste, and they tend to correct every thing that shall hinder its perfection: does not this open a wide field to the practitioner in medicine? There are so many disorders which depend upon a vitiated saliva; so many that might be prevented by proper attention to its use; and so many which, perhaps, require no other cure than what may be applied to rectify a disease, which, if suffered to lie dormant, like other occurrences of as trifling a nature, often terminate in the worst of consequences.

It is very necessary then that these organs be kept properly stimulated, and the acids may appear a very good remedy for this purpose. There is one caution, however, which should be attended

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to

to with regard to their use ; it is the danger they often threaten to the teeth. These bony substances, apparently so firm, and so well adapted to the uses of manducation are defended by a covering that may be hurt by these medicines ; the enamel is certainly of the nature of an earth. Acids very frequently join with such bodies, dissolve them, and convert them into a saline substance.

From whence it happens that the tooth-ach is often introduced by the use of acids, where they are used in great plenty, and without being properly diluted.

Let us pursue the action of acids to the stomach. Here we see their influence excited in its full extent, and producing effects wonderful in themselves, and very extraordinary on the animal œconomy. Here we see a very active body exerting its power over a very sensible part of the animal constitution, and to whose affection, we are constantly attentive.

The sensation of hunger indicates to us more than any other the imbecility of our nature, and is the strongest testimony to convince us that we can no longer subsist than while we enjoy it. It has been imagined by some learned and very ingenious persons of the present as well as the past ages, that the degeneracy of our food into an acid was the cause of this affection.

We shall not endeavour to build any theory
upon

upon such an opinion ; it is sufficient to shew that acid bodies create a very strong irritation upon this organ, stimulate to proper digestion, and are the cause of many affections which are difficult to be accounted for.

The stomach may be considered as an organ of the most consequence of any in the system ; it is therefore endued with the highest sensibility, and is capable of refusing every thing that is obnoxious to it, and admitting only what is proper and beneficial. The power which it exerts, however, for this purpose is not confined to itself, a weak and tender membrane ; it gives warning of every approach of danger to the whole system, and excites an universal action to expel it.

Experience daily convinces us of this ; and we find some stomachs so exceedingly delicate in this respect, that the smallest quantity of acid will affect them, and produce a very powerful diaphoresis ; so great a sympathy reigns between the stomach and the rest of the body, particularly the skin.

They excite by this power an appetite to food, which have been lost and depraved ; they stimulate to the digestion of the aliments after they are properly prepared ; and greatly strengthen the general tone of this organ, so as to fit it for future usefulness : besides which, they occasion a great flow of its natural mucus, by which the food may more properly be dissolved, inveterate obstructions re-

moved and dissipated, and the latent causes of many powerful diseases eradicated and destroyed.

Acids, when brought as far as the intestines, have very little power by simple irritation : they there meet with a very considerable corrector in the bile, a substance which we already examined, that prevents their efficacy in this respect, except when very redundant and copious, and then they excite great pain, and sometimes prove purgative ; at other times the contrary effect may be produced, and great costiveness procured.

This is the case in the *colica pictonum*, which often seems to depend on an acid composed by the powers of fermentation, and a deficiency of the bile to correct it ; we have never been able, however, to introduce a medicine *, by these means, that shall answer the intended effect. The only means by which we can attempt any thing for this purpose is, by the anus, in the form of a clyster. In this method, indeed, acids are said to have a powerful effect ; and, administered in large quantities, to prove a smart purgative ; but they introduce so disagreeable a tenesmus, that it prohibits their common use †. They might, however, I should think, be employed with great success in paralytic affections of the bowels ; a case which

* See the dry belly-ach, and method of cure, page 66.

† Acids in this disease are oftener forbid than recommended.

frequently occurs, and is cured with great difficulty.

The blood, laden with various kinds of matter, may be considered as a vehicle which carries every particular that is of use in the system to its destined place; for this reason it is we see so great a variety produced from one, which seems to contain the constituent parts of neither. The law instituted for this purpose is very uncertain, and is a point of physiology that has never been settled; we see it take place, however, with many medicines. Acids act very peculiarly in this manner: they are no sooner taken into the body than they often stimulate the kidneys, and occasion a very great flow of urine. Several other secretions are likewise influenced by them; and their use in affecting the bronchial glands may be found to be a considerable benefit.

In sprains, &c. they give a tone to the vessels which are too much relaxed; in bruises, they tend to repel stagnate and corrupted blood, enable it to be circulated through the system, and carried off by some secretion; and in tumors, which require a resolution, they may act powerfully in expelling the matter of them, to where there is least resistance.

We have already intimated sufficiently concerning their power of checking putrefaction; and we need only attend here to the opportunity they

have of producing this effect. The stomach seems to be the place where they act principally in this respect; there it is that the fœtid fomes is first generated, and from thence it is that the whole circulation continually receives an access of new matter.

We can hardly imagine that the general fluid can be acted on any otherwise than by this means; and there is hardly ever a fever produced that does not reign more in this organ than in any other part. There is one circumstance, however, of putrefaction, even after the whole mass is dissolved, which requires the accession of acids to every part: this is the turgescency, or rarefaction, which takes place in these, and in *scorbutic* cases, especially when the latter are in an advanced state.

Here it is not sufficient that a good and wholesome chyle should be provided, the prevailing putrescency will easily overcome it, and convert it into its own nature; neither is it sufficient that one organ should be kept pure whilst all the rest are tainted and corrupt. When disorders of this kind then prevail to such a degree, we are not to be sparing in our administration of acids; but the largest quantities seem indicated, both internally and externally, exhibited in various manners to the whole constitution.

The variety of disorders that are connected with what we call fever, or a quick pulse, an accession

cession of heat, and uneasiness in different parts of the body, is of such extent, that it will be impossible for us to attend, in such a treatise as this, to every particular. We shall content ourselves, then, with considering fever as of three kinds, *inflammatory*, *malignant*, and *hectic*; and attend to the use of acids, when exhibited in each of these types of the disease.

An inflammatory fever arises from a violent action of the vascular system, proceeding either from obstructions induced by viscosity, or from spasms induced by acrimony. In consequence of either of these, the heat of the body is considerably increased, the blood is circulated in a much quicker and more violent manner, the features are often swelled and protruded, and great pain sometimes produced.

The action of acids is employed to remove each of those symptoms; but in particular is calculated to alluage the heat, and regulate the too frequent motion. The manner by which it produces them is complicated and rather obscure; it seems to depend, however,

1st, Upon such sedative power as arises from constant astringion. We have already observed the power of acids in this particular, when we observed that universal sympathy that reigns between the stomach, and the whole system, by which, in some measure, it concurs with every thing that af-

fects this particular part. This constriction, however, is not founded upon astringency alone ; we must have recourse to irritation likewise properly to explain it.

And although it seems in effect directly opposite to what we consider as such, yet a more attentive observation will convince us of its truth. The constriction that arises from astringency can never extend itself through the system, for it is not the effect of an animated being. The assistance then of such an action, as applies to the truly animal power, must be called in to account for this effect ; but how it produces it raises the difficulty. All stimulants, when applied to our bodies in a very violent degree, become sedative, and all sedatives in a low degree, may be considered as stimulating. It has always been difficult to account for the power of sedatives ; and opium, the chief of them all, has never admitted of a just theory.

The fact seems to depend upon the great force of the stimulating matter which overcomes the tone of the fibre, and makes it insensible of that which affects it with much less force. This is not done, however, by a relaxation ; the contrary to it, as we mentioned before, is produced ; and to this astringency in the present case will greatly contribute, though, of itself, entirely unequal to so powerful an effect.

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The consequence of a violent constriction is always a sense of cold, and the common influence of cold is to produce this circumstance. Besides this, the greater motion of the vascular system, which probably increased the general heat, being taken off, a cooling quality, or rather a delivery from heat, is attributed to these bodies.

2dly, The cooling effect, and particularly what causes the increased motion to subside, may arise from the power of acids, as irritating substances, to remove obstructions in the small vessels of our system; these obstructions are often the cause of inflammatory fevers. We have seen the power of acids over the small vessels, particularly of the secretory organs; and we have seen the great sympathy between the stomach and the whole body in an universal irritation.

3dly, The influence of acids in the cure of inflammatory fevers, may be derived from their power of correcting putrefaction and the bilious juice. A fever seldom finds the body, particularly the stomach, in proper order; nay, it often derives its source from the imbecility of this organ. But after it is once raised, the whole constitution feels its effects; the appetite fails, and the digestive powers are deprived of their office: in consequence of this, the remains of indigested matter become corrupt and putrid, and the bile is collected to no purpose.

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If they are suffered to continue in this state without a remedy they add fuel to the fire, and prevent the action of any medicines which do not previously take off their offending progress. No medicine can be found to answer this better than what is the subject of our present attention. We may give them for this purpose in every state of this kind of fever, and there is no doubt but they will be always found of considerable service.

A putrid malignant fever derives its origin from a fomes of corruption that inhabits the incumbent air, from a degeneracy of our fluids that is induced by a relaxation and debility of the solid parts, or from corrupt and noisome food that is taken into our stomach. In consequence of this universal spasm is raised throughout the system, great heat and motion is occasioned, and restlessness, languor, and often pain, is induced. It enjoys, however, this difference from inflammatory fevers, that it is not built upon the strength of the fibre, but on the contrary upon debility, and that the fluids, instead of opposing by their density, and occasioning obstructions, are weak and dissolved, and can with difficulty be preserved in their proper channels.

Acids, however, are equally fit to act in this as in fevers of the other kind. By their sedative power they are fit to resolve spasms, and at the same time to strengthen the fibre. They are to
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be given, however, not to act upon the stomach only, but upon the whole system; if possible to be carried through the lacteals, and distributed amongst the secretions; when they arrive there they may produce their proper effect, and they may give a density to the fluid.

Their great and most efficacious power, however, is in correcting putrefaction, and from this alone may be derived every other which they are capable of producing. The great difficulty in these cases may be in the method of exhibiting them; and to this purpose we ought not to delay any means that can possibly be made use of. The strongest acids, given internally, can produce very slender effects when carried beyond the stomach, except in the minutest secretions. They may, however, have been given in too small a quantity; the effects of large doses have not been sufficiently attended to, and the least pure, as well as concentrated, have been generally employed.

Physicians have commonly contented themselves with vinegar; and that in a weak state, as well as a small quantity, half a pint a day has been as much as has been generally exhibited; but how inconsiderable a quantity that is to correct so large a putrid mass, need not be told. It is inconceivable how much, even of the strongest acids a stomach will bear, when every thing within it tends to corrupt them; and it is inconceivable likewise,
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how small a quantity ever enters and circulates with the blood, and can possibly contribute to destroy the putrescency of its nature. If fifty drops of spirit of vitriol are diluted in two ounces of water, there will not be above a five hundredth part that will enter the sub clavian vein at any one time.

We should not decline then giving acids in a very large quantity, and very frequently, and try how much every stomach will bear, that we may be certain it has taken as much as it possibly can, before we pronounce from any theory, that it has received what is sufficient for the purposes we intend. The most probable theory will justify the greatest excesses, and many an ingenious thought has been buried in oblivion for want of a proper trial.

We are not only to employ acids in this kind of fever internally; a great probability of success will arise likewise, from their external application. They may be used for this purpose in cataplasms, in fumigations, or in clysters: they may likewise be exhibited at the nostrils; and by this means, not only restore vigour to the neighbouring parts, which are peculiarly depressed, but contribute their share, by a continual absorption, to the general intention over the whole system.

The remote causes from which fevers are induced, may act not only upon the whole system at once,

once, and destroy the entire habit of our constitution ; they may attack particular parts also, and these parts may likewise receive an injury from bodies that are incapable of immediately affecting the whole mass of our fluids. In consequence of such attacks, not only an inflammation is produced, but a new kind of matter is created, which admits of the highest degree of putrefaction, or at least, of an acrimony equally as powerful. The absorption of this matter, so acrid and stimulating, by veins, which are as numerous as every pore, cannot fail of exciting violent action in every fibre over which it passes, and induces a fever of a peculiar kind, which is generally known by the name of

Heftic. This fever is never continued, but in general recurs at peculiar periods, corresponding to the accession of new matter in ulcers, from which it derives its source. In the fullest and most perfect health, we are subject to a disorder of this nature ; and every meal of which we partake, becomes the occasion of it. Inactive, sluggish, and inert matter, can never become the proper object of our food, because it does not stimulate sufficiently the powers of digestion.

It is necessary then, that a degree of stimulus be added to our aliment to give it force, and introduce it into our system. This occasions that temporary fever which every one experiences upon a
full

full meal; which subsides upon its complete digestion, and recurs again as often as it is repeated. This progress is likewise observed by the most powerful hectic, which differs only from the other in the duration and virulence of its nature, the acrimony with which it is endued, and the parts upon which it is exerted.

All ulcers are capable of producing this disorder in the extremities of the external parts, as well as those more internal, and consequently more important. The lungs, however, are its peculiar subject, and where it is most commonly exhibited; we shall therefore enter into a more diffuse consideration of the effects of acids upon this organ, by examining into the progress of their utility, in the several diseases to which it is liable.

When we take into our view the tender nature of the substance, of which the lungs are composed, the variety of functions they are obliged to perform, and the variety of accidents to which they are subject, it is surprizing that no more fall a victim to diseases of this organ, than what daily experience evinces: the ravage, however, which is committed by them is very great. The air that passes to and fro through the pulmonary vessels, is often replete with the most noxious particles; and the constant circulation of the blood through them, carries with it all the venom with which that fluid is often infected. Hence it happens, that almost
every

every kind of fever affects them in a very particular manner: this accident however, is always reputed rather symptomatical than original, and requires the same cure as was indicated in the pulmonary disease.

Where it begins, however, in their substance, a moderate attention to their functions is pointed out. It puts on in general the form of inflammation, and hence requires the cooling regimen in the highest degree. Whether acids, however, are always indicated, is not absolutely determined: the same reasoning will not be so conclusive, we must confess, here, as in the cure of fevers of this kind in general. As greatly irritating, they may, indeed, both by sympathy and immediate application, resolve those obstructions that were the proximate cause of the disease.

The fibre, however, in these cases, is often very strong, and the fluids very dense, viscid, and inactive. Acids tend rather to promote these affections than to remove them; and hence they may prove a greater injury than relief, when the whole business is to be transacted in so small a compass. In a common inflammatory fever, we must not attend merely either to the strength of the fibre, or the state of the fluid, because we cannot apply any remedies immediately to them; but in glandular obstructions an attention to both is highly necessary, because our whole cure is directed

rected in removing that cause, which depends upon this affection. The more relaxing deobstruents seem therefore more particularly to be indicated in such cases.

And although the cooling effects of acids may be highly desired and wished for, yet we must delay their too plentiful use, till the blood is more dissolved, and there is some danger of a fever of the putrid kind succeeding. The same may be said of that fever which often precedes hectic, and is dependent upon the state of inflammation, with which the lungs are affected, previous to the production of an ulcer. In such cases as this, I have known acids bring on a violent straitness upon the breath, which could only be removed by evacuations, and medicines of a more relaxing and deobstruent nature.

We are not therefore to be too free with the use of these substances, till we are certain a hectic is produced; and this is known only by colliquation, or the spotting of a true pus. Too often physicians are mistaken with regard to the nature of this fever in diseases of the lungs, and imagine every fever that attends a consumption to be truly of this kind. But it is not so; frequently a quick trembling and weak pulse will be observed, where the blood is highly inflamed, and indicates, instead of corroborating anti-hecktics, a more plentiful evacuation.

A true

A true hectic seems to be a fever that attends upon an absorption of noxious matter, which can only arise when an ulcer is formed, and belongs not to an incipient consumption, but to the last and most confirmed state of that disease.

It is a common notion, that diarrhœas and dysenteries arise from crude acid juices in the primæ viæ, which corrode and torment their tender fibres, and occasion a dejection of the substances they contain. This is often the case; but it may be easily discovered by the remote causes from whence they proceed. If these disorders depend upon a sluggish inert humour of this nature, from the admission of unripe fruit, or the acid in its natural state, we should certainly beware of the use of medicines, which may only add fuel to fire. But if even in such cases as these, the acid that prevails is owing to too great a fermentation of ripe and well digested fruits, the fossil acids may be exhibited to advantage, because they correct all processes of this kind.

To examine the variety of chronical diseases with which the body is infested, in order to discover how far they admit of acids for their cure, would be a very laborious task, that might lead into depths of endless research. It will be sufficient I hope for us to mark the general causes from which they often proceed, and to which the force of acids can be applied.

The principal use of acids in chronical diseases seems to be required in those that immediately affect the organs of digestion, the stomach, and alimentary canal: with this intention they correct putrefaction, and a redundancy of bile, and strengthen the organ; in consequence of this they prevent nausea, and take off indigestion and flatulency; and they restore the proper order of the several secretions that are necessary for this purpose. They are of considerable use too in stopping hæmorrhages, an effect with which so many disorders are connected. This they do by that surprizing sedative quality with which they are possessed, and by that sympathy between the stomach and so many different parts of the body.

The ingenious author of the Treatise on Acids, about the time he wrote it*, was a remarkable æra for brilliant discoveries in the science of chemistry, the history of which has since made its way, and of which he could not then avail himself. The chemical luminaries that rose in the European horizon within the last twenty years, have almost new-modelled this instructive science. Happily, I hope, for future generations, chemistry has become a fashionable part of a gentleman's education. A science so much the source of arts and manufactures, and so perfectly interwoven with natural philosophy, which has but one true infallible

* 1769.

standard, the test of experiment, seems well calculated to enlarge the boundaries of the human understanding, and prune the luxuriance of analogous reasoning.

I sincerely hope that a difference about names and modes, which seems at present to retard its progress, will shortly give way to that higher value. Such rational men as oppose each other on this fairy ground, ought to set upon the things themselves.

Pardon the digression of a man attached to his profession.—The ingenious author we were just now speaking of, at the time he wrote, thought it out of the reach of our art to separate the mucilage from the vegetable acids*; later discoveries have proved it otherwise: and when the time arrives that those acids are depurated, or freed from the mucilage that envelops them, by processes carried on upon a large scale, it is not improbable, but that the use of the mineral acids in medicine may be wholly obviated; not that I wish to suggest any thing against their application in this intention, in proper hands duly diluted.

* Page 37.

Depuration of Lemon-juice from its Mucilage.

SATURATE boiling lemon-juice with powdered chalk, whose weight is to be noted. The neutral saline compound is scarcely more soluble in water than felenite; it therefore falls to the bottom, while the mucilage remains suspended in the watery fluid, which must be decanted off: the remaining precipitate must then be washed with warm water until it comes off clear. To the powder thus edulcorated a quantity of vitriolic acid, sufficient to saturate the chalk, and diluted with ten parts of water, must be added, and the mixture boiled a few minutes. The vitriolic acid combines with the lime, and forms felenite, which remains behind when the cold liquor is filtered; while the disengaged acid of lemons remains dissolved in the fluid.

This last must be evaporated to the consistence of a thin syrup, and vitriolic acid added in small portions to precipitate the lime, if any should still remain in combination with the acid of lemons. When no more precipitate is afforded by the addition of vitriolic acid, a farther evaporation separates the pure acid of lemons in crystals. It is necessary that the vitriolic acid last added should be rather in excess, because the presence of a small quantity
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of lime will prevent the crystallization: this excess will be found in the mother water.

The concrete acid of lemons consistent in the air is very soluble in water, and exhibits strong acid properties; its watery solution is decomposed by length of time, by slow putrefaction. The acid of lemons abounds in unripe fruits.

The Astringent Principle.

MANY vegetable substances, such as the husks of nuts, the bark of the oak, the nut-gall, and sundry other vegetable matters, abound with a substance which has been distinguished by the name of the *astringent principle*: its distinguishing character is that of precipitating iron from its solution in acids, of a black colour.

The nut-gall is chiefly used for this and other purposes, when the application of this property is required; and, as it resembles acids in its properties, the principle has been called the

Acid of Galls.

THE astringent principle, or acid of galls, is obtained by macerating the nut-gall in water. This infusion reddens turnsole and blue paper: the acid is soluble in oils, ardent spirit, and æther.

Acids dissolve it without impairing its property of forming a black precipitate with the solution of iron. The distilled product of nut-galls likewise possesses the same property: it decomposes metallic solutions, and combines with their calces; gold and silver are precipitated by it in the metallic state. It acts upon and dissolves iron directly.

To obtain Acid of Nut-galls in a crystallized Form.

TO one pound of powdered galls must be added six pounds of distilled water, and left to digest for a fortnight, at the temperature of between 70 and 80 degrees; after which the fluid must be filtered, and left to evaporate spontaneously in the open air, in stone ware, or a glass vessel. The fluid becomes mouldy, and covered with a thick glutinous pellicle, abundance of glutinous flakes fall down; and, in the course of two or three months, the sides of the vessel appear covered with small yellowish crystals, which are likewise very abundant at the under surface of the pellicle which covers the liquor. The fluid must then be decanted, and ardent spirit being poured upon the mucilaginous deposition, the crystals and pellicle dissolve the salt, by the assistance of heat, without touching the mucilage; and by evaporation of this spirituous solution, the pure *gallic acid* is obtained

tained in small brilliant crystals, of a grey colour, inclining to yellow. It precipitates martial vitriol and other salts of iron, of a beautiful black colour, and strongly reddens the tincture of turnsole. The acid of galls is soluble in twenty-four parts of cold water, or three of boiling water: it is much more soluble in spirits of wine; four parts being sufficient at the common temperature, or one, when boiling hot.

The acid of nitre converts it into the *acid of sugar*. The acid of goosberries contains the acid of lemons and the acid of apples; they are both separable from it: the acid of apples is converted into the *acid of sugar* by the nitrous acid. The salt of sorrel is obtained from the wood-sorrel, for the purposes of commerce; it is obtainable from the acid of apples: the acid of sorrel does not differ from the *acid of sugar*. Treatment with the nitrous acid converts it into the *acetous acid* and fixed air; or totally into the latter, if the action be rapid. See the introduction.

PART THE FOURTH.

SCURVY AND DISEASES IN HOT CLIMATES.

The Scurvy, its loathsome Symptoms and Concomitants.

WE may observe with Dr. Lind, that the scurvy seems to be induced most frequently by the agency of certain external causes; which, according as their existence is permanent or casual, in proportion to the degree of violence with which they act, and according to their different combinations, give rise to a disease more or less epidemic, and of various degrees of malignity.

Thus, where the causes productive of it are general and violent in a high degree, it becomes an epidemic, or universal calamity, and rages with great
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and diffusive virulence; as happens often to seamen in long voyages, and sometimes to armies. In treating of this disease, we shall chiefly confine our observations, and the application of the remedies we recommend, to these two classes of men, but in a manner equally applicable to all denominations of travellers by sea and land, and settlers abroad, whether in hot or cold climates, but particularly the former.

From the history of most navigators that have faithfully journalized the diseases they experienced at sea, we cannot collect any thing to induce us to pronounce the scurvy the endemic of cold climates exclusively. The journals of most of the surgeons in our navy, and in the service of the East India company, would contradict such a position.

Yet the generality of them, and the physicians and surgeons of our land-forces, who have served abroad, and experienced the inconveniences and fatigues of long voyages, and frequent cruizes from having no doubt attentively considered the incumbent atmosphere, and the quick influence of its sudden changes on the human system; as cold and moisture may have noted it to be a primary cause in any latitude, in promoting the scurvy.

The warmer the climate, the more sensible the effects of a sudden change of this kind. The more relaxed the body from heat, and the greater
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the obstruction of perspiration, combined to a habit weakened by disease, worn down by fatigue, or reduced by an indigestible unassimilable diet, induce the scurvy.

Dr. Lind observed, that the learned Dr. Mead very justly ascribed the most essential symptoms of the scurvy, to the agency of the air, which he considered as the principal agent in bringing on the scurvy.

How the sea air acquires such noxious qualities, he accounts for in the following manner :—In the first place, moisture weakens its spring; next, a combination of foul particles, such as are contained in the breath of many persons crowded together, and some perhaps diseased; then the filthiness of the water stagnating in the bottom of the ship; lastly, salts imbibed from the sea, some of which may probably have proceeded from putrid animals in that element, may insinuate themselves into the blood, and, in the nature of a ferment, corrupt the whole mass.

The ingenious author of Lord Anson's Voyage, remarks, there is no difficulty in conceiving, that, as a continual supply of fresh air is necessary to all animal life; and as this air is so particular a fluid, that without losing its elasticity, or any of its obvious properties, it may be rendered unfit for this purpose, by mixing with some very subtil, and
otherwise

otherwise imperceptible effluvia. It may be easily conceived, I say, that the steams arising from the ocean, may have a tendency to render the air they are spread through less properly adapted to the support of the life of terrestrial animals, unless these steams be corrected by effluvia of another kind, which perhaps the land alone can afford.

On this observation of the writer of Anson's Voyage, Dr. Lind makes this natural and judicious remark: 'That as we do not certainly know what this *pabulum vitæ* is in that fluid, which preserves and supports animal life, the only means then we have to judge of the existence of such an hidden quality as may be supposed peculiar to the air of the ocean, must be from its effects.' He afterwards goes on to show that the air of the Atlantic ocean, so far from being worse, is better, or less prone to excite a scorbutic taint, than the air in the British channel, the Baltic, or upon the coasts of Norway or Hudson's bay. And that it has been found, that ships cruising upon certain coasts, at a very small distance from the shore, where the air consequently differs widely from that of the main ocean, in being impregnated with many particles from the land, and is almost the same with that of sea-port towns, are equally, if not more afflicted with this disease, than others are in crossing the ocean.

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The qualities and use of this *pabulum vitæ* are now much better known to chemists and natural philosophers; the nature of its production, and the manner of obtaining it: circumstances that can be but concisely insisted on here. For instance,

The respiration of animals produces the same effect on air as combustion does; and their constant heat appears to be an effect of the same nature. When a terrestrial animal is included in a limited quantity of atmospheric air, it dies as soon as the air is vitiated. Vital air, in like circumstances, maintains the life of animals much longer than common atmospheric air.

Vital air may be obtained by heat from nitre, from allum, from mercury calcined, without addition, and usually called precipitate per se; from red precipitate, from minium, from manganese, and from lapis calaminaris. Most nitrous and vitriolic salts afford it by heat. It is contained in the bladders of sea-weed, and in waters. The green vegetable matter formed in water, and that vegetates about the filtering-stones, emits it, when exposed to the sun's light; and it is found in general, that the leaves of plants, in like circumstances, emit vital air: whence it appears that there are abundant provision for restoring the purity of the land air, which is continually injured by combustion,

bustion, respiration, fermentation, and other processes.

Vegetables do not thrive in vital air. These appear to render common air purer, by absorbing its phlogisticated or noxious part. They emit vital air when the sun shines upon them: this is supposed to arise from the decomposition of water.

Water may be produced by combustion of vital and inflammable air. If a mixture of about two parts, by measure, of inflammable air, with one of vital air, be set on fire, in a strong inclosed vessel, which may be done by the electric spark, the airs, if pure, will almost totally disappear, and the product will be water and an acid.

Till lately the produce was thought to be mere water; and several eminent chemists at *Paris* have strongly insisted, that it was equal in weight to the two airs made use of. The agreement however, has never been proved; and, as every kind of air usually holds a large portion of water in solution, from which the aqueous product might be derived, it still remains a problem to be decided, whether water, with respect to the present state of our knowledge, be a simple or a compound substance?

Thus far modern discoveries have assisted in enlarging our knowledge of the composition of the atmosphere. It is enough for our present purpose, that they have rendered it more than probable,

ble, that the air of the atmosphere consists of a mixture of a vital, and a noxious part.

Its gravity, expansion, and density, the world has long been acquainted with. This fluid is so subject to change, that it is hardly possible to find an equal quantity of air at different times, in the same place, of equal weight. Its pressure is governed by its weight: as heat expands, and cold condenses the elastic fluids that compose it, the different seasons of the year in any climate, and the difference between hot and cold climates, are not only very apparent, but almost incredible.

Accurate observations have enabled philosophers to determine the difference between its greatest and least gravity in Europe, to be nearly one-tenth part, which induces a pressure nearly equal to 3980 pounds, troy, on the body of a man, allowing it to contain $14\frac{1}{2}$ square feet. This remarkable difference must greatly affect the animal functions, and consequently our health. If, for instance, a person be asthmatic, he will find his disorder increase with the levity of the air; for, since pure, dense, elastic air, is alone capable of distending his lungs in respiration, it will be less capable of performing the same office, when its weight and elasticity are decreased; and consequently the valetudinarian will find his difficulty of breathing increase in proportion.

It is a common error to conceive the air heaviest

viest in foggy weather; but the contrary is the fact: for the air is actually heaviest in fine weather. This error flows from mistaking the cause. When the fibres and nerves are braced and constringed by the great pressure of the air, the blood-vessels act with their full power and natural vigour, a proper velocity is given to the fluids, and a greater momentum to overcome obstructions in the capillaries. Hence, we find ourselves alert and light, and thence fancy that the air is light also.

On the contrary, when the pressure is lessened by near 3980 pounds, the fibres are relaxed, the contractile force of the vessels diminished, a languid circulation ensues, obstructions, &c. happen, and produce agues, fevers, aches, &c. in some; and in all, a sort of indolence, or gloomy inactivity, and heaviness; consequences which we imagine result from the heaviness of the air; whereas they in reality flow from its levity.

The modern discoveries of chemical and philosophical research having brought us acquainted with so many, and ample means provided by Providence, of replenishing the atmosphere at land with the vital principle, respirable air; until future investigation leads us to discover that some such provision has been made for restoring it at sea, other than we are acquainted with at present, without deviating from the position we have laid down, of being biased by no theory, we cannot resist

resist the impulse of exercising our judgment so far, as to freely acknowledge, that we are disposed to favour the opinion of Dr. Mead, with respect to the agency of air inducing the scurvy; and think with the author of Anson's Voyage, and others, that the waters of the ocean have the property of vitiating the respirable part of the atmosphere.

The waters of the ocean consist of many saline, earthy, aerial matters, capable, when even partially decomposed, of phlogisticating or vitiating the vital air of the atmosphere. To the mutual action of these two elements on each other, the sea owes its turbulence and its waves: to the diurnal motion of the earth, and the course of the sun in the zodiac, we are chiefly to ascribe the changes of the atmosphere. These causes combined, produce tempests, hurricanes, &c. and probably vitiate the air at sea, although supposed to improve it at land.

Dr. Priestley has found that pure air is considerably depraved by agitation in the purest water. If we take into consideration another inference drawn from the curious experiments of the learned Doctor, that VEGETATION is one of the means employed by nature to purify air tainted by respiration, putrefaction, or by combustion; it would be taking no bad ground to advance, that the scurvy and putrid malignant diseases were as ascribable to the sea as to the land air.

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It would exceed the bounds that we necessarily prescribe to ourselves, to enter farther into this discussion, by observing the incredible quantity of vital air consumed by the innumerable inhabitants of the deep, which they imbibe from the sea-water by means of their gills. Whatever decomposition the waters of the ocean may undergo from this curious process of respiration, or by what animal or other process this principle may be again restored to the water, for the maintenance of the life of its numerous inhabitants, we do not pretend to know, nor are we disposed at present to inquire into.

It is enough, and probably may be thought too much, for us to say, that the agency of the atmosphere has not hitherto been sufficiently attended to by those who have otherwise so ably handled this subject. The judicious reader, it is hoped, will well consider these observations on the atmosphere; to which he can allow due force, without overlooking the agency, of perhaps, more prevalent causes of the scurvy.

Notwithstanding the scurvy, from local, from accidental, and from concurring causes, may rage, sometimes in one, and sometimes in another part of the world; and at different periods at the same place; and also that it may seem stationary, and probably is so in many places: yet, as it should seem, from what we can learn, that it is a disease

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from which no country or climate can be reckoned entirely free, we do not conceive altogether, why it should be considered the endemic of northern latitudes.

It is found to rage in the East Indies, Africa, and the West Indies, and also in the warmer, as well as the colder, parts of Europe and America; particularly on board ships in those different quarters of the world where heat is predominant. The grand ocean, the atmosphere, that circumvolves the whole world; the changes of which affect the principles of animal and vegetable life, no doubt has great influence in this loathsome disease.

The admirable wisdom and goodness of Providence, is perhaps in nothing more distinguishable, than in the balance kept up between vegetable and animal life. Vital air, indispensably necessary for the respiration and preservation of the animal creation, we have seen is the product of vegetables and light. This air, phlogisticated by animal respiration, becomes necessary to the preservation and existence of the vegetable kingdom.

By the mutual composition and decomposition of these elastic fluids, this wonderful circulation of the *pabulum vitæ* of both, may be said to reciprocally preserve the existence of each other.

It has been observed by Dr. Lind and others, that salt beef and salt pork are found by every
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one's experience to be much harder and more difficult of digestion than fresh meats, unless corrected by bread, fermented drink, or fresh vegetables. These, with stock fish, salt fish, and sea biscuit, and the ship pudding, composed of flour, water, and pickled suet, a tenacious viscid mass, with other indigestible food often used at sea, promote the sea-scurvy. Their noxious qualities and scorbutic tendency must still be increased, in proportion as these provisions are unsound or corrupted, from the length of the voyage, and other concurring causes.

It has long appeared to me, says Dr. Blane, that the scurvy is owing rather to a defect of nourishment than to a vitiated state of it. In fact, that sort of food which is supposed most commonly to induce the scurvy, is, in most cases, not putrid, but is in an unnatural and depraved state by being drained of its juices, which run off in brine; and perhaps some of the more subtile and nutritious parts are wasted by evaporation.

It is not found that salt of itself has any effect in inducing the scurvy; and indeed it can be induced under a state of diet in which there is no salt, as we know from the instances quoted by Dr. Lind; and some cases are related by Dr. Monro and Dr. Milman, in the Medical Transactions, which are in proof of the same opinion.

But the case most in point, to prove that it depends on a defect of aliment is that of Dr. Shark ; who, by way of experiment on himself, reduced his diet to the least quantity he could subsist on, and was thereupon affected with the symptoms of the sea-scurvy. I have also known some symptoms of it arise in old people, in consequence of long abstinence, owing to the want of appetite.

It would appear that the aliment we take in acts in two ways in increasing the vigour of the body. First, by assimilation, whereby it affords the matter, of which the solids of the body are made, in order to carry on growth in youth, and to repair the waste of parts in adult age. A very small quantity of matter is necessary for these purposes ; and, as a proof of it, we see people supported equally well with very different quantities and qualities of food.

Secondly, food is necessary as a stimulus, either by a power it has of soothing the nerves of the stomach, and the other surfaces to which it is applied, or by its volume in distending the intestines and blood-vessels.

It is upon this principle that luxury renders the great quantities of food we take in necessary ; and those species of food which satisfy most by their stimulus, are by no means such as are the most nutritious.

It

It is also upon this principle, that, in cases of accidental hardship from want of food, or in barren or inclement countries where food is scarce, the body is supported in some measure by what contains little or no nutritious matter, such as pure water, or the bark of trees powdered, and kneaded into a sort of bread, as we are told of the inhabitants of Lapland.

There are other familiar and well-established facts, which prove that, either from the influence of disease, from habits of life, or the nature of particular animals, life can go on for a length of time with little or no aliment. This is the case in fevers, in sea-sickness, in certain singular cases that have been recorded*, in torpid animals, and in animals of cold blood. Though a man in health will die if deprived of food for a few days, it does not follow that this is owing to the want of matter to repair the waste of the body.

The craving for food, and the faintness from long abstinence, arise from want of the accustomed stimulus, especially on those who are used to live well; and a person feels himself most refreshed by food and drink when newly taken in, and before it can be applied to the purpose of nutrition.

As there is a continual waste and decay, however, both of our fluids and solids, some degree of

* See under the head bile, part the first; and in the Medical Essays of Edinburgh, Haller, &c.

reparation is absolutely necessary, especially to animals of warm blood; and such *ingesta* as would give the stimulus of food, without being possessed of any nutritious principle, would indeed continue life for a certain time, but disease would ensue.

The provisions used at sea, says Dr. Blane, answer, in a great measure, to this description: for, unless the powers of digestion and assimilation are remarkably strong, salt beef and biscuit, which have been long kept, do not contain much more nourishment than saw-dust, or the bark of a tree, and the disease induced by this diet is the scurvy.

The nature and symptoms of the scurvy countenance this opinion: for, as the means of renewing the animal matter of our bodies is withdrawn under this course of diet, nature, in consequence of an accommodating principle, observes a sort of frugality, and the animal œconomy adopts such measures as may be productive of the least possible waste and corruption of the fluids. Accordingly all the secretions become scanty; and, in particular, one of the first symptoms of this disease, is a suppression of perspiration, as appears by the goose-skin that attends it. There is a paucity of urine: there is also a great languor in the circulation, which may be considered either as a means adopted by nature to prevent that vitiated and effete state of the fluids which a brisker action might induce; or it may happen from want of that due supply of nourishment

nourishment necessary to produce a vigorous action of all the functions.

We shall not take upon us to support that the scurvy is owing to depletion or inanition, though we are of opinion that it may be, and frequently is, a predisposing cause, and allow it to be rationally accounted for both by Dr. Lind and Dr. Blane; whose great experience in the line of their profession entitles them to due credit.

We have seen in another place, and with great plausibility and good sense, repletion assigned to be the principal cause of the scurvy, by Mr. Thomas Trotter, a surgeon of the navy. A diet of farinaceous and legumious food, boiled up and rendered palatable with guinea-pepper, palm-oil, and salt, given in excess to the *Negroes* on board a slave-ship, to which he was at the time surgeon, brought on the scurvy both on the coast of Africa, and when at sea on the middle passage, to which we refer the reader for the exercise of his own judgment.

Various have been the modes of practice suggested for the cure of this disease, which in their turn have succeeded each other, varying with the system adopted, or the fashionable theory of the times; and these often influenced with a laudable zeal to preserve the health and lives of our seamen from the baneful ravages of this disease on long

voyages; which deserved well of government, and the nation at large, for whose benefit they were written.

As innumerable as the *causes* are the *symptoms* and appearances put on by this destructive disease, both at sea and on shore. On land it has been usually, but I shall not pretend to say with what truth, considered as the endemic of northern latitudes, with much more reason of marshy situations, particularly of salt-marshes, and foggy moist air: of people shut up in garrisons, or carrying on a blockade, or exposed to the vicissitudes of the atmosphere in camps; of prisons, of hospitals, and of ships on long voyages; frequently making a rapid impression on convalescents, disabled or debilitated by preceding disease.

Originating probably in a greater or less degree, from obstructed perspiration, and a relaxed habit of body; breathing a moist foul air, whether contaminated with the phlogistic exhalations of sea or land; the perspirable matter, or the diseased breath of each other; putrid effluvia, or air rendered noxious or unfit for respiration from any cause whatever, or taken up by absorption into the animal system, so as to act as a putrid leaven or scorbutic ferment.

The pulse, the blood, nor its secretions, manifest no uniform indications for the guidance of
the

the young practitioner in this disease. There is nothing in which the faculty are less agreed, than in the varied appearances of the blood, recently drawn from the scorbutic patient: nor could the most systematic arrangement that we should be able to make from their different observations on this important fluid, enable us even to form a standard for our own government.

The same may be said of the secretions of the blood: the urine and sweat are not always different even from that of people in health. In some very far advanced and bad cases, the urine from the putrid crassamentum of the blood, as in fevers, sometimes acquires a steam-colour; and after standing an hour or two, gathers a cloud, resembling what is seen in the crude water of acute distempers, with some oily matter on the surface; which is a strong indication that the animal sceptic process is far advanced in its degeneracy towards putrefaction.

As the pulse, blood, and urine are not uniform indexes of the rise and progress of this disease, they consequently have been the source of many fatal mistakes.

The mouth, gums, fauces, and organ of respiration, are usually much affected with the putrid, corrosive, scorbutic taint: and no part of the system seems exempted from its destructive influence, except the brain. It should seem also, that
scorbutic

scorbutic patients, from preserving their appetite to the last, suffer less in the immediate organ of digestion, than perhaps in any other part of the animal system, the brain only as before excepted.

Offensive breath, difficulty of breathing, a fallow bloated countenance, discolouration of the skin, with purple, yellow, or livid spots, usually not rising above the surface of the skin; a disinclination to move or stir about, with oppression and weariness; unusual timidity and dejection of spirits; lethargies, swelling of the legs; above all spongy, putrid, bleeding gums; hardness in the muscular part of the arm, and calves of the legs; hardness with contractions of the limbs; sometimes with a discolouration of the skin of the part affected; contractions of the elbow and ham; frequently without hardness or increase of bulk of the part, and sometimes with discolouration, particularly with variegated streaks on the thighs, wasting of the legs; pains like those of the chronic rheumatism; acute transient pains, succeeded as the disease advances, by others much more exquisite; tremblings, fainting, convulsive fits; internal as well as external effusions of blood, and by vomit, stool, and even through the pores of the skin; a solution of continuity, or the breaking out of old wounds and sores, and a resolution of the callous matter that nature had furnished as a cement to fractured bones;

bones; a thick clot of blood forming on the surface of ulcers, which, from its resemblance, the sailors call bullock's-liver.

From these and many more symptoms common to this disease, the conclusion generally drawn is, that the true *sea-scurvy* is a relaxed state of the solids, and a putrid dissolution of the fluids. To such morbid impressions the life of a seaman is equally exposed, whether destined to navigate in a hot or cold climate; and to which it is not improbable the heat of the climate does not a little contribute: heat and moisture being the parents of corruption.

This much we know from experience, that many symptoms of the scurvy are rather aggravated than alleviated in warm or hot climates; particularly on board ships, and in want of vegetables and the vegetable acids, which might be rendered mild in more temperate situations, and even less obstinate in cold latitudes.

When we consider the symptoms, and compare them with the predisposing and exciting causes of the disease, reason suggests, both for its prevention and cure, pure dry air, with a diet of easy digestion; consisting of a due mixture of animal and vegetable food, with an indulgence in the free use of the tart acerb fruits in season, and their acid juices, where such a regimen can be procured; and in default thereof, tonic antiseptic medicines, such as our antifebrile and *antiscorbutic* powders, which are
well

well calculated to counteract the causes, and palliate the most urgent symptoms of the disease, by bracing the solids, and evacuating the scorbutic acrimony by perspiration and urine, until the disorder is first got under, and at length subdued.

A temperate region and dense atmosphere, of which a pure dry air is the offspring, are only procurable in a temperate or moderately cold country, and by those who can afford to correct the cold and moisture by a dry apartment properly heated, and ventilated by means of a fire, and suitable conveniences that render life comfortable; some few places only excepted, that naturally enjoy a pure dry air, the density of which must vary in all places with the changes of the atmosphere.

Doubtless there is no period of the medical history of this disease, in which it is so well understood as the present, from its having been an object of enquiry for some years past, that has engaged the attention of many able men: but as this treatise may fall into the hands of young practitioners, I beg leave on their account to touch lightly on the symptoms of such diseases as have, from a supposed similarity of appearances been too frequently mistaken for, and confounded with the *true scurvy*.

Some of those concomitants, or appearances, frequently mistaken for the true scurvy.

WHEN there is a wasting of the body without a fever, and other hectic symptoms, it is called an *athrophy*; which is relieved by the use of our antifebrile powders, preceded by a vomit of ipecacuanha, when the legs swell, and the digestion bad; and usually cured by the frequent use of laxatives, and a light restorative diet, riding on horseback, air, and the cortex Peruvianus. See hectic, page 178 and 203.

If *scrophulous* symptoms attend with schirrus, tumor, or *cancerous ulcer*, the internal use, and the external application of the antifebrile powder on the indurated part, if on the surface or visible there; if not the powders may be assisted with the bark and acids, and a decoction of the woods. Scrophulous tumors are commonly seated in the glands, and when in or about the neck, are usually termed the *king's-evil*.

The diet should be light, and easy of digestion; exercise in moderation will be conducive to the re-establishment of health. Pork, cheese, smoaked, dried, and salt meats, fish, and high aromatic sauces are not allowable.

If

If symptoms of the *jaundice* appear; that is, an universal tinge of yellow over the skin, chiefly observable in the whites of the eyes; an inactivity, lassitude, anxiety; sickness and oppression at the breast; difficult respiration; pain about the pit of the stomach; a dry skin, with itching and costiveness; high-coloured urine, with a bitter taste in the mouth; hard, white, greyish stools, begin with bleeding, and purge with an infusion of fenna and carraway-seeds; take our antifebrile powders, and drink plentifully of a decoction of juniper and Harrowgate-water alternately. If an inflammation of the liver is suspected, resort to the liberal use of the antifebrile powder, and pursue the directions under this head, page : pay the same attention to diet as in the preceding article.

If the *leprosy of the Arabians*, known in the West Indies by the name of the *black-scurvy*, a contagious *African* disease: it comes on gradually; first in numerous spots on the body, of a yellow-brown cast, that soon turn to either purple or copper-colour, and chiefly appear in the forehead and skin; they increase and grow thick, with hard scales and bad blotches, and usually on the lobes of the ears; most of which symptoms are also observed in the *elephantiasis*. Bleed, and vomit with emetic tartar; then steadily pursue a course of the antifebrile powders, for three months at least,

least, with the use of acid dilutents, aperient infusion of fenna and carraway-seeds, and gentle cathartics. All sorts of pickled, salted, dried, and smoaked meats, cheese, pork, fish, high sauces, and spirits are not to be allowed.

If symptoms of the *leprosy of the Greeks* appear, a disease better known in hot climates than in these kingdoms, yet sufficiently deplorable, and not easily cured. It appears in dry scurf-scales and scabs, and deeper rooted in the skin than the leprosy of the Arabians, attended with a greater itching; often destroys the skin, and even the excretory ducts.

For the cure of which, the antifebrile powder, No. 2, with a decoction of the woods, hereunto annexed, is a sovereign remedy: keeping the body lax, with a spare diet, easy of digestion; the frequent use of the warm bath, and the occasional use of our *antiscorbutic ointment*.

The leprosy commonly met with in these kingdoms, seems to be a local disease of the cutis, its vessels and glands; appearing in dry, white, thin, scurfy scales, usually attended with an itching. They seldom put on a humid complexion, but in very gross habits. In hard drinkers, it often appears in the face and hands only.

The leprosy is seldom dangerous, though always difficult to cure, particularly in grown people.

ple. In children it sometimes appears on stopping of the running behind the ears: it has also followed the confluent small-pox, a stubborn itch, &c. and sometimes appears under the form of a scabby, or *scald-head*; and is supposed to be in some cases hereditary. It often appears in the glands of the neck, and parts adjacent, when it is called a *struma*.

The humid is esteemed easier of cure than the dry; much depends on the cause, constitution, continuance, &c. The antifebrile powders, and antiscorbutic ointment, with a slender liquid diet, keeping the body laxative, will palliate the most urgent symptoms, and by perseverance, conquer this obstinate malady. The antiscorbutic powder given going to bed, alternated with the antifebrile powder, No. 2, and perspiration encouraged, as directed in the scurvy; and the scabby deffodations of the skin touched with the antiscorbutic ointment going to rest, on such nights as the powders are not exhibited, will contribute much to cleansing the skin, and opening the excretory ducts, to let off the peccant matter, and promote the cure.

The true scurvy, as already observed, not being of a scabby scurfy nature, as in these cases; but appearing of a purple, yellow, or livid colour, in spots usually not raised above the surface of the skin,

skin, but generally resembling bruised marks and flea-bites, and not requiring a similar treatment with those diseases, should be necessarily distinguished from them.

There are other concomitants that more uniformly attend the true scurvy than those enumerated. Those are dropical swellings in almost every part of the body, especially in the chest and legs, which are always difficult to remove, and sometimes prove fatal. Considerable quantities of water frequently accumulate in the breast, that occasion a violent and incessant cough, with a constant spitting of tough phlegm, and sometimes a difficulty of breathing. Œdematous swellings of the legs accompany these disorders of the breast, and are the sure signs of water being in that cavity, and not unfrequently communicate with each other; though it must be owned, says Dr. Lind, that such passages are unknown to anatomists.

The true scurvy often associates with a flux, particularly when unaccompanied with a fever, a fever being rarely present with this disease; although the quick and low pulse, and heat of the skin, have too often been fatally mistaken for a fever. It is true, we meet with few instances of an epidemical malignant fever unaccompanied with a flux, either ushering it in, or symptomatically attending its decline, but with which the scurvy is rarely associated.

Under the head *Comparative effects of our medicines*, it is observed, the *bark*, though a bitter, astringent, and antiseptic medicine, cannot be successfully employed in the cure of the scurvy, as many bad symptoms in this disease forbid it; in which disease our medicines are specifics, but accompanied by them it may be exhibited with safety.

Although it is certain, and not without reason, that *antimony*, which has so long been found useful in these diseases so often mistaken for the scurvy, has been lately recommended in the cure of the sea scurvy also; yet it is reasonably to be expected, that medicines like ours, possessing all the good, without any of the bad effects, or inconveniences attending the administration of the preparations of this important semi-metal, should in this disease supersede its use.

In hæmorrhages, and in putrescent and scorbutic diseases, where *mercury* would exasperate the symptoms, our medicines are next to infallible in the cure; particularly in the sea scurvy, when joined to the liberal use of vegetable acids, bitters, and astringents. Cream of tartar is a vegetable acid, dry, portable, convenient, and useful in those and other intentions to the traveller.

Opium has been recommended, when diluted in brandy, by Dr. Milman, for the cure of the sea scurvy; probably from perspiratives being found

found beneficial in the cure of this disease, although our medicines resemble opium both in their internal and external effects; yet it must be acknowledged that it is in an under proportion; but being tonic and antiseptic themselves, and at the same time a corrector of the bark, they naturally supersede the use of opium.

Mercury, or the preparations of it, although found salutary in sundry cutaneous defections and impurities of the blood and juices, vulgarly called scorbutic, are always pernicious in the true scurvy, and even dangerous in constitutions inclining to this disease, when the humours are acrimonious and colliquated, and disposed to a putrescent state. In such circumstances, mercurials are apt to operate with violence: small doses have occasioned high and lasting salivations. The removal of these accidents are to be attempted by clysters, purgatives, and diaphoretics; or such other means consistent with the patient's strength, and the particular symptoms, as may procure a speedy revulsion from the salival ducts. These particulars relative to the potent remedies enumerated, are reiterated here, to make the deeper impression on the mind of the reader. And to guard the young practitioner from unwarily administering mercury in a venereal taint, accompanied with scorbutic symptoms, &c.

We shall take occasion to reiterate what we

have said on *squills* under the concomitants of the ague, in which we are justified on the authority of Doctors Lind and Home.

Dr. Home observes the squills at first produce purgings, and increase the urine, which are their natural effects, and sometimes reduce the hydropic swellings a little. In a few days, sooner or later, a nausea and vomiting came on, often severe and attended with acute pain in the stomach. During this fit, the pulse was so remarkably slow as to alarm, and induce the Doctor to give laudanum and cordials to stop the vomiting, which he afterwards found to be a constant effect of that state, attended with no danger: the squills used were perfectly exiccated: the quantity used for a dose varies according to the constitution and urgency of the symptoms; three or four grains, twice a day, were generally found sufficient, though much greater was given in peculiar habits without success. It being the Doctor's design at first to excite urine, he gave them with a little nitre and nutmeg, to correct them, which formula he always continued. The waters disappeared so suddenly in some, that fearing the bad effects that follow the paracentesis, he thought it right to order a bandage to the belly, and tonic medicines; as bark, steel, and bitters to brace the system.

Dr. Lind recommends oxymel of squills as an expectorant, diuretic, and antiscorbutic medicine, of great efficacy.

Mode

*Mode of Exhibiting the Antiscorbutic, Antifebrile
Medicines in the Scurvy.*

IN order thoroughly to subdue the scorbutic taint, the medical intentions must be to keep open, by gentle evacuations, the outlets and emunctories of the body, viz. the belly, urinary passages, and the excretory ducts of the skin. And it is remarkable that all these evacuations are most successfully promoted, when joined with an antiscorbutic diet. For a mild laxative employ terra foliata tartari, or

Take terra foliata tartari from one to ijʒ.

Essential oil of peppermint x drops.

Mucilage of gum arabic sufficient to make a bolus.

This bolus usually operates plentifully by stool, and promotes a copious discharge of urine.

Take terra foliata tartari from ijʒ to jʒss.

Antiscorbutic powder, No. 1, from v to x grains.

Mucilage of gum arabic sufficient to make a bolus.

This last, if there is a redundancy of bile in the first passages, will eject it upwards or downwards. After these evacuations are properly encouraged to a moderate extent, the patient should be kept warm, and supplied with small but fre-

quent draughts of vinegar or mustard whey. This will promote a gentle diaphoresis, more or less copious, but always salutary and correspondent to every intention proposed.

In default of milk to make whey, a slight decoction of ginger acidulated with vinegar, and made palatable with wine, will prove a good succedaneum.

Sweat is an evacuation from which scorbutic patients derive the greatest advantage, particularly such as are afflicted with obstinate dropical swellings, and may be procured with remarkable success by the antifebrile powder, No. 1; the management of which may be gathered from the directions given in their exhibition, distributed throughout this work, in aid of which the warm bath may be beneficially added. On board ship, where fresh water is usually scarce, sea water has been advantageously employed for making a warm bath.

In evacuating the morbid acrimony, the utmost care must be taken to support the strength and spirits of the patient, under the languor and dejection of this debilitating disease.

It is to be observed of this disease, especially in an advanced state of it, that it by no means admits of bleeding, even when the most acute pains, a high degree of fever, and dangerous hæmorrhages, would seem to indicate it. And, though the body should at all times be kept open, it would

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be very injudicious to administer violent purges. Laxative food is preferable to laxative medicines; such are green vegetables, acid fruits, or their juices: when they are not procurable, barley-water and currants, stewed prunes, cream of tartar, &c. must be substituted in their stead.

Persons in the advanced stage of this disease are not, without great caution, to be exposed to a sudden change of air; or brought up from laying a bed below, in the hold of the ship, to the fresh air, in order to their being landed. On this occasion, though seemingly pretty hearty, a glass of wine should be given them, well acidulated with lemon or orange juice, which is likewise the best cordial in their fainting fits.

After long abstinence from greens and fruits, a scorbutic person should be treated like one almost starved; that is, not permitted for a few days to eat voraciously, or surfeit himself with them; they may otherwise bring on a flux that may prove mortal. The necessity for cleanliness, and a constant ventilation, or admission of air, may be gathered from the following observations.

The living body is surrounded by an atmosphere of excrementitious matter, issuing from every pore of its external surface. The internal surface of the lungs is computed by anatomists to be equal in extent to the circuminvolving skin of the whole body. It is well known that breathing,

or respiration, vitiates the surrounding air, and renders it unfit for the preservation of animal life.

The living body at rest, or pent, or shut up in a room, sooner or later, vitiates the air of the place, or apartment it is in; the less it moves in that space, the sooner it begins to inhale an air contaminated with its own effluvia, and vitiated by its own respiration,

A number of people in one room or place, enclosed on all sides, like so many fish immersed in water, breathe one and the same fluid, continually vitiating by their respiration and perspiration. This fluid becomes insalubrious and intollerable, in proportion to the number of the people, the smallness of the room, and its want of free ventilation, by doors, windows, chimnies, &c,

We need not carry this reasoning, so obvious to every reader, any farther, to convince them of the necessity of motion, change of place, or walking, riding, or other exercise, so necessary and conducive to their health and existence; and, from similar reasoning, they may form some judgment of the purity, salubrity, and free circulation of air, in the apartments they sleep and mostly live in; and of the filthy, impure, unhealthy situation of all crowded, confined, unventilated places.

In cities and great towns the air of houses and apartments are often further vitiated by privies, shores, or drains, the putrid stench of slaughter-houses,

houses, and many noxious trades and manufactories.

At sea the foul air, composed of the breath and perspirable matter of crowded ships, is rendered still more unfit for perspiration, by the confined, moist, putrid exhalations from the bilge water and contents of the ship's hold, greatly deficient of the sanative qualities of land air, replenished by vegetation, and other sources of restoration of its vital principle.

Dr. Wilson, in his observations on the influence of climate, judiciously remarks, that among the discharges or excretions from the body, that by the *lungs* seems least attended to, and hath been frequently considered of little importance as an evacuation.

Dr. Keill and Dr. Hales found that a man in twenty-four hours lost, by perspiration, thirty-one ounces *, six of which ounces went off by expiration. A small increase or diminution of this discharge must be attended with evident consequences; and, although the diminution of one excretion generally increases another, without much inconvenience or uneasiness to the body; yet we apprehend that the excretion from the lungs cannot, in a very great degree, be diverted into another channel.

* Sanctorius computes it to be fifty-two ounces in Italy.

Air is the medium by which the lungs are enabled to make their discharge; but air is capable of receiving only a certain impregnation, and of carrying off but a certain quantity of moisture and putrid affluviūm, which quantity depends on the state of its impregnation at the time it is inspired. When it is extremely dry and well de-phlogisticated it will carry off a great charge from the lungs; but, when it is highly impregnated, it will carry off very little, and, if saturated, it will not free the lungs at all.

Suffocation is immediately the consequence of respiring air, saturated with the phlogistic principle; its effects are exactly the same with a total want of air, as in both cases the lungs get no relief by any discharge.

Dr. Crawford, by his ingenious publication on *animal heat*, has shewn that the discharge of the phlogiston, by the lungs, is necessary to the support of that heat; as this principle is received by the atmospherical air taken into the lungs at each inspiration from which it precipitates; and the system imbibes a certain quantity of heat; and the same air, which has been deprived of its heat, goes off by expiration, charged with phlogiston extricated from the animal system.

That the fixed air produced in respiration depends on the change which the atmospherical air undergoes

undergoes in the lungs, is, the doctor thinks, evident from the following facts.

Air is altered in its properties by phlogistic processes; and, though many of these processes are totally different from each other, yet the change produced in the air is, in all cases, very nearly the same.

It is diminished in its bulk; it is rendered incapable of maintaining steam, and of supporting animal life; and, if we except a very few instances where the fixed air is absorbed, it universally occasions a precipitation in lime water. We have, therefore, reason to believe, that there is no instance of phlogistic processes in nature which is not accompanied with the production of fixed air.

The power of vegetables to absorb phlogiston, is too well known to be here insisted on; therefore, by their absorbing this principle from the fixed air discharged from the lungs, it is again fitted for the purposes of animal life.

Consequently, as phlogiston, by whatever process extricated, renders air noxious to animals, and makes it salutary to vegetables, we infer, that it is this principle, contained in natural rains, which so much increases the growth of plants.

* Dr. Wilson observes that the productions of

* Dr. Alexander Wilson's Observations relative to the Influence of Climate on Vegetable and Animal bodies.

the vegetable kingdom depend on those of the animal, as the latter cannot exist beyond due proportion to the general state of the former; and, as the body of every animal first existed in a vegetable form, from which it has been changed by the process of anamalization once or oftener, it seems naturally to follow, that the state of animal bodies must be influenced by the qualities of their nourishment; and, as the qualities of that nourishment depend on aliment, climate, and the condition of the animal, must not only be effected by the same cause, through its food, but also by the immediate action of these causes, which so much influence the health and growth of vegetables.

Vegetables, as food, may be considered under two heads or classes; and these classes we shall distinguish by their general properties. In the first we shall include all vegetables which are capable of the vinous and acetous fermentations, or of the acetous only, without the vinous. In the second we shall comprehend such vegetables as emit an alkaline vapour first, and then run more or less into an acid state, before putrefaction takes place, or into putrefaction, without any previous discoverable degree of acescency.

We shall next divide animal substances into three classes, by the names of half *animal food*, simple animal food, and compound animal food. By the first is meant that which is between vegetable

table and animal, yet partakes of the nature of both without being either; such is the milk of herbaceous animals.

By the second is meant the flesh of those animals which feed on vegetables, such as cattle, sheep, &c.

The third comprehends those which are carnivorous, whether biped, quadruped, fish, fowl, or reptile.

A diet of vegetables, entirely of the first class, is the most difficult of any to digest and assimilate, not only from their texture, but being furthest removed from the nature of animal matter, by having one at least, if not both of the fermentations to undergo, previous to putrefaction still unperformed. From these causes they are retained long in the stomach and intestines before they yield their nutriment to the lacteal vessels. The chyle from them is thin and watery, and much less corroborating in hot than temperate climates.

Those who live wholly on vegetables, even assisted with a cold climate and exercise, are, generally speaking, short lived, and, in the decline of life, fall off much faster than others who have used a proper quantity of animal food; which is an observation made by Sir John Pringle.

The same observation holds good in a still higher degree in warm climates; they co-operate
with

with such food, in relaxing and debilitating the body, the juices of which must, under these circumstances, be poor and thin.

By our division of aliments, of the second class, is comprehended those plants generally stiled alkaliescent and aromatic; as onions, mustard, horseradish, &c. These vegetables may have their alkaline acrimony dissipated by coction; but even in this state, they become putrid much sooner than vegetables of the acescent kind.

They are, however, totally incapable of supporting the human body, as the nutriment they yield is very trifling. Their principal utility consists in promoting the digestion of other vegetables in the stomach, when used with them. Their stimulating powers, when raw, assist digestion; and hence the aromatic and alkalescent plants are much used in this state, by these who live principally on vegetable food, particularly in warm climates.

They act in some degree like animal substance, by absorbing the acidity from vegetables of the first class, which accelerates their dissolution. From Sir John Pringle's experiments, the saliva, mixed with vegetable aliments, prevent effervescence, even out of the body, although the vegetable matters, notwithstanding, go through the different stages; therefore it is, that in healthful bodies, nourished with a due proportion of animal food,

food, the saliva and stomach juices prevent eructations; but, when animal matter is wanting, the alkalescent plants are in the same way useful.

In weak stomachs and poor thin habits eructations, from a want of such correctors, are common: this effect is produced by a mixture of every kind of animal matter with vegetable food; and, the more animalized the matter is, the more powerfully will it act in diminishing effervescence, by absorbing the acid as soon as formed; and, in the same manner do the alkalescent plants act when boiled, by becoming putrid sooner than those of the acescent kind.

Animal substances as food: and to begin first with half animal food; as the milk of herbaceous animals, which we consider as the chyle secreted from the blood, with this difference, that, when in the state of milk, it is more animalized than when in the lacteal vessels, as it hath undergone an intimate mixture with the blood, previous to its secretion, by which its assimilation, when taken as food, will be more easy than if used for the same purpose when in a state of the chyle.

For these reasons it becomes a good, quick, and easy digested nutriment, without the difficult and tedious extraction of the chyle, which retards the digestion of vegetable food, though it still retains these acescent qualities which give vegetables the power of correcting putrefaction.

It

It has been already seen what process vegetables go through in the course of their digestion and assimilation, from which, the cause of their slow conversion into animal substance is readily understood. It now remains to shew wherein the difference between the digestion and assimilation of *simple animal food* and vegetable matters consist.

Animal substances, from having undergone the two first fermentations, are as far advanced in assimilation, when broken down and macerated in the stomach, as the chyle from vegetables of the first class is, when mixed with the blood, after having undergone the discharge of its acid.

From this advanced state of animal matter, its assimilation is easy, and, from its texture and solubility, its digestion is also accomplished with little difficulty.

Animal substances, for these reasons, affect very different from vegetables; the latter are antiseptic in proportion to the acid they produce, while the former, being past that state, are no longer correctors of putrefaction; but, in animal heat, run directly into it with considerable rapidity, unless that tendency is counteracted.

It is evident that animal food is more strengthening than vegetable, as it is made up of the nutritious parts of vegetables only, concentrated and prepared for easy union with living bodies.

Animal substance, as a constant food, is ill fitted

fitted to the human frame; a continued use of it without vegetables, must soon end in putrefaction, as the only correctors of its tendency then left are *motion* and *air*; the effects of which last, as a corrector of putrefaction in living animal bodies, we shall hereafter shew to be greater or less according to climate.

Animal substance, by being the most strengthening food, becomes its own corrector, by increasing the strength of the solids, and consequently quickening the motion of the fluids. This to a certain degree is salutary; but if carried further, putrescency brings on relaxation, disease, and death.

The circulation of blood in herbaceous and granivorous animals is moderate, and often languid: their tempers are docile, mild, and timid. In carnivorous animals, circulation is quick, and their tempers are often violent and fierce, unless when those effects of food are counteracted by climates either very hot or exceedingly cold, as we shall hereafter mention more fully.

The digestion of *compound animal food* is easy and quick. Such animals as live on food of this sort have exceeding little action of stomach.

Fish are the common food of fish, and their dissolution is easily accomplished by the juices of the stomach, which seem to act as a menstruum.

The facility of digestion and abundant nutri-

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ment which this kind of food affords, is generally considered as the source of that high health, and those numerous families among the inhabitants of the sea-coast.

Vipers swallow their food whole, which are animals, and many of them in some degree carnivorous; such as rats, mice, lizards, &c. those rest in the body until softened, and melted down by the heat and animal juices. From the nature of their feeding, and this manner of digestion, they stand high in the rank of compound animal food. This species of animal substance is therefore of quick and easy digestion, and the nutriment from it not only very great, but of ready assimilation.

Common snakes which feed on herbage possess none of those qualities in any higher degree than simple animal substance.

In cases where much nutriment is wanted in a small volume, and easily digestible state, fish and vipers are most proper. The milk of carnivorous animals, which is very near the state of compound animal food, might be found proper also for this purpose.

All the consequences will follow a diet of this kind, in promoting the general tendency to putrefaction, which has been mentioned as the effect of simple animal food, only in a higher degree, and shorter time, if taken in the same climate in equal quantities, without proper correctors.

The

The rapid progress to putrefaction in highly animalized bodies, arises from a more perfect extinction of all the antiseptic qualities of vegetables, which went to form the original body; and the farther they are removed from that state, the more quickly do they become soft and putrid, and consequently the more easily are the lean parts brought into a digestible state.

The oily parts of all animals are most difficult of digestion, and those of the most animalized are the most so, from their great want of acid: therefore, when fish and vipers are directed for weak habits, the lean only should be used.

With such food acids are highly proper, and hence the greater propriety of using much buttermilk where fish is the common food*.

The flesh of herbaceous animals, such as cattle, sheep, &c. resists putrefaction under equal circumstances of heat and moisture, longer than the flesh of dogs who have been nourished with animal food. It is well known, that the flesh of carrion-crows, sea-fowls, and fish of all kinds, will become putrid sooner than either of the above animals.

Mr. Reaumur has observed, that unimpregnated eggs resist putrefaction much longer than impregnated ones: the cause of this difference arises from the semen of the male being a highly animalized matter, and therefore runs sooner into .

* The peasantry and labouring people of Holland do this.

putrefaction, and acts as a ferment, which induces the same through the rest of the egg.

Dr. Wilson observes, that with respect to *vegetable food in hot climates*, exercise, and the vegetable correctors of the second class, which, as hath been already observed, act in some degree like animal food, and will keep the body tolerably stout in warm climates, as the atmosphere in those climates is more charged with phlogiston than the air of more northern latitudes.

It is therefore less capable of promoting a copious discharge by the lungs, but perspiration is increased to make up for this deficiency : yet notwithstanding the quantity of this discharge by the skin, that very warmth which promotes it, gives the whole body a strong tendency to putrefaction, which corrects the effect of vegetable food, by rendering the animal juices more capable of absorbing the superabundant acid.

The digestion of a continued vegetable diet is by that tendency much promoted ; yet in warm climates, where animal food is totally wanting, a continued vegetable diet will relax the body so much, that putrefaction frequently follows from a weak and languid circulation*.

In such cases the smallest wound becomes a sore, and a thin, sharp, acrid, and putrid humour

* Exposed to heat and moisture.

gleets continually from the mouths of the relaxed vessels; tumors are formed by the stagnating fluids, which break and become ulcers; and this continued drain prolongs the life, by discharging the putrescent matter, which would otherwise accumulate.

This condition of the body from relaxation only, has, we suppose, given rise to the idea of a *vegetable scurvy*, which implies a kind of contradiction: but give it what name we will, it is a general putrescent state of the body, though arising from causes exceedingly opposite to that of the true scurvy.

A Negro who had been afflicted for several months with ulcers of the above kind, and exceedingly emaciated, was carried into a plantain-walk, or public garden of the plantation, that he might be abundantly supplied with vegetable food, and live at his ease, which seemed the only means of preserving his life: this had not the desired effect; for when we saw him, he had been there near two months, and became worse than when brought to it. He was now removed from this place, and provided with salt beef and salt fish, of which, when boiled, he eat three times a day, and was made to move about, and to increase his exercise daily, as his strength would permit.

We must here observe, that a putrid tendency from the above causes is productive of the same

dull inactive stupor, which are the consequences of the true scurvy; yet so opposite is it to that disease, that those affected with it, have a strong propensity to animal food and absorbent earths*, which they eat with great avidity, from an instinctive knowledge that these will correct the acrescent state of their fluids.

This patient's ulcers were every day bathed with a strong decoction of bark, to which a little rum was added; after this they received no other dressing than some powdered bark sprinkled on them. In ten days a visible alteration appeared in his strength and spirits; his ulcers after this began to look better; in six or seven weeks they were quite filled up; and in less than three months were perfectly well, and the Negro sound and fit for easy work. After the first three weeks his desire for animal food diminished greatly, and as he got strength, he returned to his former appetite.

We have mentioned this instance, as it was particularly attended to, though all the attempts we have seen made in similar cases, predicted an issue equally favourable; but the want of attention in those climates often frustrates cures which require so much time and care.

It is very common in the Sugar Islands, when a Negro falls into this habit, and is much reduced,

* See dirt-eaters, under the head Negroes.

to send him on board some small coasting-vessel, where he generally gets well by being obliged to move about, and having an abundant supply of beef, fish, and other animal food.

Animal food in hot climates is productive of the opposite effects, as Dr. Wilson very justly observes; the heat and state of the atmosphere co-operate to promote and quicken the dissolution of such food, which, by its abundant nourishment, and speedy animalization, counteracts the relaxing tendency of the climate, and gives strength to the whole frame.

Such condition of body is certainly the most desirable, were it not the most dangerous; under such circumstances of food, the whole body is in a high animalized state, and consequently, in such climates, under a strong tendency to putrefaction.

When obstructions happen, which prevent the excretions in their due proportions, the body soon acquires from its animalized condition, a putrescent tendency that is speedily increased by the heat, and the impregnated state of the atmosphere, which we have already shown renders it unable to absorb a due proportion of phlogiston from the lungs.

Dr. Milman makes the following remarks on the means employed by Dr. Lind, in the cure of the scurvy :

All the means of cure which have been enu-

merated, says Dr. Milman, may be reduced to the following heads: to the *nutrientia*, *sudorifica*, *stimulantia*, and the *tonica*.

The first of these act upon the simple solid, by repairing the necessary and daily waste of the machine, which could not be replaced by an indigestible diet or insufficient food: nourishment restores that state to the fibre, which is requisite to the due action of the vital power. By giving that degree of plethora which is necessary to promote the various secretions and excretions of the body, it prevents that principle from being weakened by the retention of impure matters; the evacuation of which leaves it in a condition capable of properly exercising its functions.

This is the manner in which I conceive the fresh-boiled beef and greens of Haslar hospital, and fresh flesh-broths, have rendered the benefit which has been observed to follow sometimes their separate, and at others their joint use.

The acid juices of fruits, of the lemons and the oranges, are great promoters of perspiration and urine. Their virtues in the cure of this disease were improved by dilution with water-gruel, which cannot be well conceived to operate otherwise, than by giving that fulness to the vessels which might render the effect of the acids, as sudorifics and diuretics, more certain.

But when the disease was a good deal advanced,
and

and great weakness had taken place, a pint of rich Malaga wine, joined with four ounces of these acid juices, by its stimulant cordial properties, added great efficacy to these, which was still further increased by the addition of a quantity of sugar, so as to occasion a sort of effervescence at the times of taking this mixture.

That the wine and the active spirit discharged by this effervescence, are useful by their cordial and stimulant qualities, and by concurring with the acids in gently promoting the proper excretions of the skin and kidneys, seems evident from the happy presage always drawn in this disease, when the skin, from having been dry, becomes soft and moist.

Dr. Lind moreover informs us, that the effects of this cordial mixture actually were sudorific and diuretic. This view of the subject affords us some means of accounting for the beneficial effects ascribed to the mineral waters in the scurvy; in consequence of the considerable quantity of fixed air they contain, they are stimulant and diuretic.

* Dr. Caleb Dickinson observes, that the causes inducing scurvy, and other putrid diseases, operate upon the solids in weakening the vital principle. Every circumstance corroborates this idea: it gives the most satisfactory explanation of the symptoms;

* Dr. Caleb Dickinson's Enquiry into Fevers, and Observations on the Existence of Putrefaction in the living Body.

and

and as the degree of debility increases, so the different phenomena characterizing the different stages of the disease ensue; and, as he says, to use Dr. Milman's expression, *the very essence of scurvy is weakness*.

He urges, that the remedies and means used to resist putrid diseases, are those that tend to invigorate the body, such as a nourishing diet, the moderate use of wine, proper exercise, with the article of cleanliness. And remarks from Dr. Lind, that when wine was less drank in Holland, the scurvy was more frequent; and among the first cures recommended to the world, was *worm-wood infused in wine*, and this was afterwards used in Saxony as a preventative, where this disease occurred very often.

Dr. Lind, in his *Health of Seamen*, recommends bitters (as a preventative of putrefactive and malignant diseases) composed of a gallon of *spirits*, eight ounces of *bark*, and four ounces of *dried orange peel*.

As these are medicines of a tonic, corroborant, antiseptic quality, they no doubt strengthen the stomach, and invigorate the habit; and as Dr. Lind is of opinion, that whatever tends to impair the constitution, especially the digestive organs, operate sufficiently without any other cause, to introduce the scurvy, in a mild or in a malignant degree; the wine and spirit bitters mentioned are
both

both good preventatives at sea, and in other situations in which seamen, soldiers, and others, are exposed to this disease.

The frequent use of these bitters taken on an empty stomach, by strengthening the digestive organs, and enabling them to elaborate the viscid gross aliment commonly used at sea, may subdue one cause of scurvy, *defective nourishment*; and by their tonic stimulant qualities, in some degree, fortify the system against another cause of scurvy, *humidity*.

Due attention should be paid to the foregoing investigations, the combined result of judicious theories, improved by an extensive experience of men of the first abilities, and greatest opportunities; who all concur in the advantages of *regimen*, as a preventative and restorative, over the best medicines that have been hitherto exhibited in this disease; drawn from a sub-astringent, acescent, invigorating combination of vegetable and animal food, duly proportioned to the exigencies of the case.

Exemplified in the officers of the navy and army, who are so much better clothed, lodged, and dieted, than the common sailors and soldiers, which from the nature of situation, must ever be the case. Therefore, it is not in such regimen alone that we are to look for a remedy in this disease, applicable to all ranks; but it is to medicine principally

principally we are to resort, as the primary resource for the most fanative and least expensive *bracer* of the animal fibres, composing the relaxed solids of the debilitated scorbutic. Equally fit to *correct* the broken down crasis of the blood, and that may check the too abundant degeneracy of the animal process, and strengthen and enable the digestive organs to subdue the viscid chyle, and assimilate a due proportion of nourishment for all the purposes of a healthy existence; with such food, and under such untoward circumstances as the life of a sailor is usually exposed to.

Every medicine that in a considerable degree answers those salutary purposes deserves at least a liberal and fair trial, and should be received and brought into general practice, in proportion to its safety and efficacy. Every man, whether medical or not, must see the expediency of supporting its introduction into the navy and army, and protecting its progress into general use, until its merits have established it in practice beyond the reach of ill-founded prejudice, and the lighter, but not less dangerous attacks of ridicule. We have well-grounded reasons for thus prefacing the introduction of our

ANTISCORBUTIC MEDICINES;

The mode of successfully exhibiting which are as follows; especially when the general method of cure cannot

cannot be complied with, by the assistance of the most desirable regimen.

IN order to render our method of treating scorbutics as simple as we possibly can, we shall divide the symptoms that usually accompany the commencement and advance of this loathsome disease, into three stages; in each of which shall be given our method of stopping its progress, and effecting a cure.

Apprehending from what we have already said on the subject, that the generality of our readers will be able to collect the means of preventing this disease, as far as they have it in their power to exert such means; and to guard against the influence of climate, and the local disadvantages unavoidably arising out of situation: together with what may be further collected from what shall follow for the preventing a relapse of the patient, after a cure has been effected.

The *prevention* of the scurvy, like all other diseases, must always consist either in removing the causes which produce them, or when this cannot be effected in counteracting their influence. The scurvy is produced by so many and various causes, that it has hitherto baffled the efforts of physicians and philosophers; particularly in long voyages, under the unfavourable circumstances unavoidably attending them; some of which have been enumerated,

merated, and they are all so well known, that it is needless to dwell on them, particularly as our medicines are intended to obviate, or counteract many of those causes.

Dr. Lind, Dr. Rouppe, and others, have been very accurate in their description of the symptoms of this disease; but at the same time so copious, that the bounds prescribed to our work, would determine us rather to prefer the concise manner observed by Dr. Thompson, did it fully answer our present purpose; our work being calculated for the use of all who go abroad, whether medical men or not, we are under the necessity of descending to particulars; therefore shall proceed as follows:

I*. Most writers on the subject agree, that the first symptoms of the scurvy are uncommon slothfulness, and aversion to all kinds of labour, attended with a desire of sitting or lying, especially in any obscure corner. This gradually increases, and is soon converted into spontaneous lassitude, and heaviness of the limbs; so that the men are fatigued and out of breath with the least motion. If the disorder gains ground, and they strive to keep themselves in motion, besides the lassitude they feel heavy pains all over, as if they had been greatly fatigued. At length having lost

* Dr. Lewis Rouppe.

all desire of moving, they soon lose the power of motion by the pains that they feel, and then find such a difficulty in breathing, that they seem to be suffocated.

Another symptom among the first is, when, after having been full and heavy, they become fearful and timorous; they are then soon taken ill of the scurvy, in which state they are struck with terror from the smallest incident; nor can they be convinced that they are secure, and are not to be inspired with any degree of confidence.

If the disorder increases they lose all hopes of recovery, and cry on the most trifling occasion, although they were brave fellows before this disorder; after this they become almost insensible, and as if their spirits were broken by long continuance of misfortunes, and bear injuries tamely without murmuring.

The countenance becomes pale, fallow, and bloated: though the colour of the face is changed, it is not to that paleness which people have after fevers and severe illness; nor is it such a colour as people of weak constitutions have, but there is something in scorbutic patients of a robust appearance, though without redness; nor is the face emaciated, but seems to have a mixture of yellow and blue colour joined to paleness.

The same colour is observable in the whites of the eyes, and the red vessels in them disappear.

The

The carunculæ lachrymales turns pale, as well as the lips, which grow of a sub-livid colour. Those who in health had any colour, still retain it in part, but mixed with a yellow and bluish colour. The vessels which before were full of red blood seem livid, as is often the case with some people in very cold weather.

The more this disorder gains ground, the more this yellowness of the face is observable; and if it proceeds to its last stage, the colour of the face, from being yellow and bluish, becomes inclinable to green.

Scorbutic people have their belly somewhat swelled at the beginning of this disease, and find a tightness there without any pain: at least none complain of any, excepting a troublesome sensation in the epigastric region, which they say felt as if bound with a fillet; they are usually costive. As the disorder increases the face swells, particularly the lower eyelids; the legs grow œdematous, and the patients dropfical.

The swelling of the legs of many is first observed at their ancles towards evening, and hardly to be perceived next morning; but after continuing a short time in this manner, gradually advances up the leg, the whole of which becomes œdematous.

The first pathognomonic, or inseparable symptom of this disease, is the goose-skin, which has
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the following appearance :—In the beginning of the scurvy small tubercles appear on the skin, like those which show themselves when the naked body is exposed to the cold. But it must be observed that the epidermis, or scarf-skin, in this state, protuberates more than usual; that it does the same in the parts which are covered and warm; and though the tubercles are greater, and rise higher, they are not yet so numerous as when arising from exposure to the cold: some of these form a large basis, and end in a point. At the top of these tubercles there is a yellow and somewhat red point, like a bladder, which in a few days grows red, when the point appears better.

The colour daily increases and gets darker; the tubercle by degrees is depressed, and grows flatter, until at last it is quite smooth, and then there remains only a small purple spot: this generally happens at the latter end of the first, or the beginning of the second stage; but the longer they remain the darker they grow, till at last they are quite livid, which generally takes place about the middle stage of the scurvy.

These spots are somewhat roundish, about the size of a lentil, and are generally observable about the knees, and the inner parts of the legs and thighs, but are not so frequently seen in the other parts of the body.

If the spots remain any time, the scarf-skin which covers them falls off naturally in scales, or the cuticle is abraded by scratching it, and then they disappear, but others succeed them very soon, and generally continue to the end of the second stage, when they finally disappear; nor do they terminate in suppuration, and are but seldom observed in the third stage.

The goose-skin appears sometimes ten or twenty days before the gums are affected, so that if the tubercles rise, and the tops of them are red, it may be always foretold that the gums will soon be affected.

In the beginning of this disorder the skin is dry and rough; in the middle dry, rough, and scaly; but at the end, when the dropfy comes on, the hair usually drops off.

The subsequent pathognomonic symptom is the ulceration in the gums. About the end of the first stage the gums begin to itch, to swell, and grow red; and if they remain in this state for some days, they contract small ulcers, particularly in the edges, are very painful, and separate from the teeth. The more the disease gains ground, the more they swell, and the gums separate from the teeth, by which they begin to loosen, and are soon so loose that they can be easily pulled out, or fall out of themselves.

When

When they are in this state the gums swell very much, and bleed upon the least touch. Besides this, on the internal part which is next to the teeth, fungous flesh sprouts up, which sometimes rises above the edge of the teeth.

The part of the gums which are between the teeth swell, and, on account of the pressure of the teeth, grow gangrened, and putrefy; the same happens if they grow too much above the teeth: then also the gums easily bleed, and ooze out a black clotted blood, which sticks between the teeth and the gums, but may be soon removed with the fingers.

But if it putrefies in the mouth, it not only gives a most foetid smell, but likewise makes the ulcers larger, which by degrees destroys the gums, and produces a gangrene and *caries* in the adjacent parts; but this seldom happens unless in the last stage of this disorder. From what has been said, it appears, that the three periods of the scurvy may be easily distinguished, since there is scarcely an instance of a man having that disorder, without having those symptoms likewise, and therefore they may be considered as the true and certain signs of it.

There are two things which we have had in view throughout this work; the one is the preservation of the *bile* in a sound natural state. The bile is a medicine of Nature's own formation,

elaborated within the system it is destined to preserve; for the secretion of which she has provided a large apparatus, and the diurnal formation of that fluid is proportionably large.

That celebrated anatomist CHESELDEN* observes, as the liver, from its situation in the same cavity with the stomach, will be most pressed, and consequently separate most gall when the stomach is fullest, which is the time when it is most wanted; so the gall-bladder, being seated against the duodenum, it will have its fluid pressed out by the aliment passing through that gut, and consequently at a right time, and in due proportion; because the greater the quantity of aliment is, the greater will be the compression; and so the contrary.

This great anatomist knew no way of computing with any exactness the quantity of *bile* that is usually secreted by the liver, in a given time; but if it were four times as much as all the salival glands secrete, it may be twenty-four ounces for every meal: to which being added six ounces of saliva, which, he thinks a moderate computation; and supposing the pancreas in the same time secretes three ounces, there will then be thirty-three ounces of fluids separated for the digestion of one meal; and that these necessary fluids may not be wasted in such quantities, a great part of them

* Cheselden's Anatomy.

pass into the blood with the chyle, and may be soon separated for the same use; and very likely some of the same bile may be employed more than once for digesting part of the same meal: and as the liver exceeds all the glands in the body in magnitude, and its excretory ducts ending in the duodenum, it seems to me to be much more capable of making those large secretions from the blood, which are produced by cathartics, than the scarce visible glands of the intestines.

The other thing that I have had in view, is the salutary and extensive use that should be made of acids; a subject that has been so well handled by Dr. Far, that I thought I could not do better than make the extracts I have done from that gentleman's treatise on the subject. To impress what we have written upon those two interesting points, the *bile* and *acids*, the counter-balancers of each other, was our motive for reiterating them here.

We apprehend our medicines will be found a corrector and preserver of the one, and an useful substitute for the other, with respect to its tonic, stimulant, antiseptic qualities, and to its sedative, but not its cooling qualities, nor as an immediate extinguisher of thirst, &c. but in a more indirect manner.

We have touched on the universality of acids in the introduction; and under the head acids we have shown, that the astringent principle in vege-

tables is an acid, and exemplified it, by giving the process to obtain it from galls, p. 211.

The *curative* indications in the scurvy will be to restore the secretions and excretions, on which the health and vigour of the animal system depends; or, in other words, to set open those emunctories or out-lets provided by Nature for the discharge of the degenerate matter thrown off, or prepared to be thrown off, by the circulating fluids as superfluous; not because this redundant accretion of matter is merely inert, but from being so highly animalized, as to become acrid and unfit for the further preservation of the animal system. This is to be attempted by bracing, invigorating, and giving a due elastic tone to the animal fibres, composing the vessels through which these fluids circulate, for the maintenance of animal existence, commonly comprehended under the word solids.

These fluids should be the product of a well elaborated chyle, composed of, or impregnated with, such materials as are endowed with a power to reciprocally stimulate and excite such elasticity in the animal fibre, as promotes the natural secretions and excretions, and enables the circulating fluids to repair the waste of the motion, and attrition of the parts.

To accomplish this, the first passages must be cleared; the descent of the tainted saliva of a corrupted mouth and gums, into the stomach, as much

as

as possible prevented, or counteracted, by correcting its morbid qualities with acids and other astringents, at once to combat its influence there, and strengthen and stimulate the stomach and intestines, to perform with vigour their respective offices, and give energy to the digestive organs, effectually to elaborate the first and last concoctions.

By these and other invigorating means to rouse the languid circulation of the scorbutic patient; in both which intentions, deobstruents should be occasionally called in as auxiliary helps, to render the glands and capillary ducts pervious to the circulating fluids.

By cleansing, correcting, or renewing the air they breathe in, if loaded with accumulating putrescence, by steams of vinegar and ventilation alternately; or if phlogisticated by the respiration of a number of people impacted together, resort to the same or similar means of correcting it.

When vinegar is not procurable the burning of astringent gum resins, or the woods of those trees which produce them (easy to be procured in warm latitudes); which, from emitting an acid principle, and volatile alkali during rapid combustion, produce the next salutary impregnation for correcting such foul air, and which is also to be alternated with ventilation, by conducting the

atmospheric air into every recess occupied by the foul, or the foul impregnated air.

As for the burning of sulphur, and other substances that are antiseptic from their phlogiston, or phlogiston and volatile vitriolic acid, they can only be performed in the absence of the people, or while they are on deck, as they do not afford, but injure a respirable air. The greater the quantity of gunpowder mixed with the burning sulphur (consistent with safety), the more beneficial will be this kind of fumigation.

The steams of vinegar, and the steams and air arising from fermenting vinegar, in the process of souring by artificial heat, may be copiously inhaled with safety. The air extricated in the vinous fermentation, copiously inhaled, is instant death, being similar to that vitiated by combustion and respiration. The salubrity of the former is experienced every day by the workmen employed in the preparing vinegar by artificial heat, who are obliged to strip their bodies naked when they go into the stove-chambers, or rooms where the vinegar is souring, the vapour is so hot and copious; in which they frequently remain above an hour, without any danger to respiration, notwithstanding the heat and moisture of their situation.

This is the more extraordinary, as there is a great deal of moisture as well as phlogiston discharged

charged each expiration from the lungs, which renders dry air the more necessary to respiration.

That the lungs should be an organ peculiarly affected in the scurvy is easy to conceive, when we consider that, from the appearance of either the goose, or the glossy skin of scorbutics, perspiration is interrupted, and the urine at the same time mostly scanty; the lungs under these circumstances must be nature's dernier resource, by which the breath must be highly vitiated, and this organ exposed to the whole fumes of the morbid acrimony; being by this means the only out-let for the *materia perspirabilis* of the whole animal system to escape at.

Except the copious defluction of saliva common to some phlegmatic people, particularly great chewers or smoakers of tobacco, may be reckoned an exception to this general rule; but this is a less general symptom than those we have, and shall further enumerate, and may be accounted for by a peculiar disposition of the salivary glands in the former, and in the latter, from the flow of the saliva being solicited from the habit of using tobacco, as before-mentioned.

In scorbutic sailors, however, this discharge of saliva is frequently increased to an alarming degree, and can rarely be suppressed in such patients, by any other means than by copious perspiration. Gentle laxatives, and potent diuretics
have

have relieved some, and frequently have a share in restraining this morbid discharge, which in proportion to its extent, is always injurious to the teeth and gums, and highly debilitating to the patient.

In order to correct the laxity of the solids, and promote the natural secretions and excretions,

Take of antiscorbutic powder, No. 2, from v to x grains,

Antifebrile powder, No. 1, from v to x grains.

Powdered bark of the root of mazereon, x to xv grains,

Conserve of wood sorrel, j 3,

Syrup of orange-peel, sufficient to make the mass into a bolus.

To be taken at night, and perspiration encouraged by vinegar, cyder, wine, or mustard whey. A gentle diaphoresis taking place is a good prognostic, and should be unremittingly followed up.

Take of antiscorbutic powder, No. 2, one packet, (i. e.) 60 grains,

Antifebrile powder, No. 1, xxx grains,

Bologne or Rhenish tartar, crude, in fine powder, xc grains,

Hard extract of red bark, xc grains,

Essential oil of peppermint, ij 3,

As much soft extract of liquorice as will form the whole mass into a paste for making lozenges.

The

The extract of red bark and the powders should be rubbed into an impalpable powder, and the essential oil added; those should be added by little and little to as much of the soft extract of liquorice diluted with wine or spirit, as will be sufficient to thoroughly mix them up to the consistence of the soft extract of liquorice, and then made into a paste for lozenges with that extract, which will weigh about three ounces if properly made. This quantity made into thirty-six lozenges, may be consumed in three, two, or in one day, according to the urgency of the symptoms.

The indissoluble matter left by the lozenge in the mouth is not to be spit out, but swallowed by the patient.

These efficacious astringent lozenges may be advantageously alternated with the following agreeable acid lozenges:

Take of antiscorbutic powder, No. 2, one packet.

Crystals of acid of tartar, cxx grains,

Essential oil of peppermint, jʒ,

Ipecacuanha root in powder, xlviij grains,

Myrrh in powder, jʒ,

Rob of lemon, orange, or lime-juice, and gum-arabic in powder, sufficient to form the whole into a mass of the consistence of stiff paste, which will be about three or four ounces.

Make it into forty-eight lozenges.

This

This quantity will in most cases be sufficient for two or three days, although there are instances of the whole quantity being taken in one day, without exciting the smallest nausea. The indissoluble part left in the mouth is to be swallowed.

In the early attacks of the scurvy on the mouth and gums, these lozenges alone, or alternated with the astringent lozenges, have always been attended with the best effects, and frequently exceeded our most sanguine expectations.

When managed in this manner they first excite, but presently restrain an unusual drain of saliva from the salivary glands; correct or neutralize its morbid taint in the first passages, and strengthen and give energy to the organs of digestion throughout all their processes.

They at the same time repress the progress of the swelling in the gums, and the incipient ulcers in the mouth and gums, and by strengthening them, prevent the teeth from loosening in them, or their bleeding on every slight occasion.

This form is well calculated for gradually and effectually introducing medicines of this nature into the system, exclusive of their salutary effect in the mouth and stomach; their exertion on the whole habit, which will be best exemplified by experience, and which will prove them to be innocent, and efficacious in the incipient scurvy, and

in a state of convalescency. *They are also good preventatives.*

As every thing that can be done to unload the furcharged lungs must be beneficial in this disease, and as no step can be so effectual to answer this purpose as the opening outlets on the surface of the body for the transpiration of the peccant matter; and as gradual means with the generality of patients will in general be found the most effectual to obtain this grand purpose, these medicines may be much assisted in this intention.

First, by keeping the patient well clothed and moderately warm, and supplying him with small, but frequent draughts of whey; or a decoction of the woods, acidulated with syrup of lemons, or any vegetable acid, particularly vinegar.

Secondly, by a moderate use of the warm bath, and a brisk, but short-continued friction of the body and limbs, immediately on coming out of the bath. First with a dry woollen cloth, and next with the same sort of cloth wrung out of any warm fish, or other oil. These parts immediately affected with the disease, may be slightly anointed to great advantage afterwards, with the dark unctuous, saponaceous, highly acid residuum of distilled vinegar, warm. This alternate relaxing and bracing the surface of the body and limbs, with anointing and friction, &c. by rendering the cuticular passages permeable, will be found of much
more

more importance than can be well imagined, and highly conducive to the end proposed; and will also contribute much to remove pain, hardness, and stiffness of the parts affected.

WHEY, the serum of milk, the produce of highly animalized vegetable food, secreted from the blood, next to air, the pabulum vitæ of most infants, the first and natural sustenance, and, in a dietic sense, the highest antiscorbutic in nature, may be carried to sea in much greater abundance, and cheaper than portable soup is, in a form or state equally portable, especially from cold to hot countries, being procurable in any quantity that may be necessarily wanted in the former.

The operation of heat in warm latitudes on the lacteal vessels of the cattle is such, that they furnish but a very small quantity of milk, compared to its produce from the cattle of temperate and cold climates: one reason probably is from the want of pasture, but there are many parts of *Asia* and *Africa* to which this want does not apply.

PORTABLE WHEY.

One gallon, that is, in London, ten-pence worth of milk, carefully evaporated to the consistence of syrup; and this unctuous matter further inspissated to dryness in a water-bath, will produce
from

from a pound to 18 ounces of palatable whey, that will keep sound, and in high preservation of all its sanative qualities, for a voyage round the world, out and home. The colour of this residuum of milk, will be the best test of its goodness, as the less it recedes from a dull, pale, brownish white, the more careful has the process been managed, and the better and sweeter it will be: the nearer it approaches to a brown colour, the stronger will be the indication of the contrary qualities.

The inspissated residuum of milk, digested with about as much water as was wasted in the evaporation, yields an excellent *whey*, more agreeable in taste, and which keeps better than that made in the common manner. This *portable whey*, if properly excluded from air and moisture, bears all the vicissitudes of climate. It can be procured from evaporated milk as easy and successfully as the essence of malt is prepared from malt, although the inspissation is here carried farther, by reducing the residuum of milk to dryness. By such easy means can this valuable article be added to the stores of the surgeon of the ship, that it would be unpardonable to omit it: one pound of which, with seven pounds or pints of sweet water, makes about a gallon of whey, which including the expence of preparing, and a reasonable profit to the manufacturer,

manufacturer, would come under eighteen-pence a pound.

Those patients who unhappily labour under the morbid defluſion of ſaliva before taken notice of, muſt be relieved by a more active courſe. Gargles muſt take place of lozenges; ſudorifics, diuretics, and laxatives, muſt be alternated with cordial and reſtorative medicines, or with a cordial and ſtrengthening regimen, when procurable.

This morbid ſymptom, from its early appearance in ſome patients, and its progreſſive virulence through each ſtage of the diſeaſe, though properly a ſymptom of the ſecond ſtage, we ſhall introduce here, as it ſerves to conſtraſt the mode of treatment in this caſe, with that which has juſt now preceded, from the greater urgency of the ſymptoms demanding immediate palliation.

Begin with the gentle laxatives already recommended, preceded by a clyſter to clear the rectum, and facilitate the operation of the cathartics; and though in moſt caſes of the incipient ſcurvy, theſe medicines will be found ſufficiently active yet they are not always to be relied on where a conſiderable defluſion of ſaliva attends; conſequently the quantities of the antifebrile and antiſcorbutic powders muſt be increaſed in proportion to that ſymptom, until a nauſea is excited, or even a gentle vomit.

By cleaning the ſtomach and inteſtinal canal,
that

that fomes of corruption derived from absorbing into the system, the stagnate foulnesses of their immobile contents are cut off, and the mobility of the secretions from these parts advantageously excited.

When diuretics are mentioned with sudorifics, and purgative medicines, we beg that we may not be understood to have classed them together as medicines of equal efficacy; although in this disease usually attended by a deficiency of urine, and frequently by a dropical tendency, diuretics are by no means insignificant medicines.

Gargles, medicines in general of no great account, are here not only indispensable, but very potent remedies, whether we consider them as auxiliaries to purgatives and sudorifics, for the diversion of the immoderate flux of humours into the mouth, or as deterging the ulcerations of the mouth and gums, correcting their laxity, and contracting the mouths of the emunctories of saliva and mucus, and thickening the consistence of those juices, which altogether contribute to lessen, and at length subdue this excessive discharge; at least the sort of gargles made use of, should be calculated to answer these intentions.

Take of oak bark, $j\overline{3}$,

Alum, $j\overline{3}$,

Honey of roses, $j\overline{3}$,

Water, a pint and a half.

X

Boil

Boil the water gradually with the oak bark until such time as the liquor, when strained, will amount only to a pint, to which add the alum and honey.

Take of tincture of myrrh, ij ℥,
 Honey of roses, ij ℥,
 Barley-water, one pint,
 Oil of vitriol, from xxx to lx drops.

When this gargle may be thought too strong, it may be occasionally lowered with proof spirits and water to the desired strength; or the quantity of vitriolic acid may be reduced.

These means, with the warm bathing, subsequent friction, oiling, and rubbing, with the brown residuum of vinegar, and the occasional fomentation of particular parts, and the exposing such parts when hardened, contracted, or swollen, to the mingled vapour arising from ardent spirits, vinegar, and water; together with as much airing and exercise as can be safely urged, bid fair towards disburthening the lungs, and repelling the salivary discharge, by restoring the due tone to the skin, and removing its papillary obstructions; while the energy of the increased circulation throws off, or evacuates by the natural excretories ending on the surface, the morbid acrimony which indolence and obstructed perspiration, with unrespirable air, and other concurring causes, had returned upon the system in the form of scurvy. We

We have said as much of airing and exercise as can be safely urged, as we cannot help thinking that indolence is too much encouraged in every stage of the disease, particularly in the first and second stages, nay even in the first symptoms, that it is too much the practice to cut off these great restoratives, air and exercise, by consigning the patient to a sick berth on the first appearance of the disease. Indeed a sailor or soldier are no sooner put on the sick list, than they think it a licence for indolence, and an exemption from duty. Every one of the least observation knows the effect of this exclusion from the society of their healthy shipmates and companions, and the bad tendency the dejection it excites. Let the healthiest man among them be kept a few days in the morbid air of the sick berth, the effects of which would be too conspicuous to need further comment.

Every symptom, denominated fever, or many appearances indicative of scurvy, would attend such treatment even of the most healthy; how greatly then must it aggravate those symptoms in the diseased? Surely, in warm climates at least, the deck, and the cheerful society of their healthy companions, is a situation much preferable to a sick berth, and consequently more conducive to their recovery.

During their absence on deck, the sick berth can be fumigated, aired, and cleaned, which may

be no bad exercise for the incipients and convalescents themselves, as the less those who are much afflicted are in it in the day-time the better, and the less of these attentions will be requisite, airing or ventilation excepted; and something should be found for them to do, even when not weak handed.

The confinement to a hammock, and a recumbent posture, should in most cases be discouraged; and when indulged on account of much debility, it should be remembered, that every effort to prevent its becoming habitual, should be carefully attended to, as inattention in this has cost many their lives, and retarded the cure of many more, where excessive lenity, or mistaken humanity, has too licentiously permitted it.

The consequence of such indulgence bringing on habitual inactivity, may be seen in the terrible effects of sudden motion, or sudden exposure of scorbutics to the air; in the precautions of Dr. Lind and others, who recite the fatal consequences attending it.

The Doctor, as already remarked, observes, that persons in the advanced stages of this disease, are not without great caution, to be exposed to a sudden change of air; or brought up, from laying a-bed below in the hold of the ship, to the fresh air, in order to their being landed.

On this occasion, though seemingly pretty hearty,

heartly, they have not unfrequently expired. The uncommon degree of sloth and laziness which constantly accompanies this disease, has, on the other hand, been sometimes mistaken for the wilful effect of the patient's natural disposition, and has proved fatal sometimes, when obliged by their officers to go aloft, and make other exertions, which from their debility they were unequal to.

It is judiciously remarked by Dr. Rouppe, that before these men are set about the usual work of the ship, the surgeon, from the present state of the sick, should order their work accordingly, lest they be suffocated by the circulation being too much accelerated.

At the beginning of the disorder, the men are able to bear all kinds of hard labour and exercise, except those of the severest kind, which require a man's full strength: but as the disorder gains ground, the exercise ought to be less, and that as much as possible in the open air; and they should every day get upon deck, and walk there; for if they neglect it at first, in a short time they are rendered incapable, and cannot be brought into the open air without danger of suffocation.

In case a man, by wounds, is necessarily confined to his hammock, he should be swung every day in it, as much and as frequently as he can bear. This kind of motion, as an exercise, under

these circumstances, has been contrived by Dr. Lind, and recommended by Dr. Rouppe.

If the scorbutics, from accident, bad or inclement weather, cannot come upon deck, then such exercise as they can take below should be enforced. But, in the last stage of the disease, not only all kind of labour, but almost all sort of exercise is superseded by the danger they are in of being suffocated on the slightest exertions.

And when there is an occasion for the patient's getting up, his hammock should be lowered down gradually at the feet, and so managed that he may come gently on his feet, and afterwards accustomed by gentle degrees to stand, and then walk, and carefully led towards the stairs; gradually to accustom them to the air, whose elasticity would be too great for them to go all at once into it: and lastly, when their strength permits, they may be carried upon deck, and by degrees brought to move about. These precautions are the more necessary when the patients are to be carried on shore, as a want of due attention to them has cost many their lives that otherwise might have done well.

II*. In the second stage of this disease many more symptoms occur, besides those that have been already mentioned in the first, but are not so

* Dr. Rouppe.

constantly met with as the former, nor do they happen in all cases. Amongst these the too great defluſion of ſaliva, is a principal one, which, for the reaſons already aſſigned, we have gone very fully into, in the ſymptoms of the firſt ſtage of this diſeaſe, to which we beg leave to refer the reader.

With reſpect to this ſymptom, we ſhall here take occaſion to remark, that the teeth in thoſe patients looſen ſooner, and their gums are ſooner deſtroyed than in thoſe who are not afflicted with this defluſion of ſaliva.

Very acute pains are uſually felt in ſome part or other of the body and limbs, particularly about the bones in this ſtage of the diſeaſe; and theſe rarely yield to any remedy, and as rarely ſhift from one place to another.

When the little ſpots of the firſt ſtage diſappear, they are in this ſtage ſucceeded by larger and deeper, and thoſe more under the ſkin than the former. The ſpots at firſt are red, and generally keep ſo as long as the legs remain hard; but when they become œdematous, the ſpots grow livid and black, like thoſe which ariſe after contuſions.

Thoſe are frequently ſo thick upon the legs and knees, that little or nothing of the uſual colour of the leg remains, principally red, and black and blue in particular places.

In this stage the legs are commonly very troublesome, painful, and itchy; and if ever so slightly scratched, the epidermis or outer skin is so tender as to rub off, by which means scorbutic ulcers break out, and not spontaneously, as some suppose.

Those who have hard legs their ulcers never emit any pus, but are subject to increase, and are generally covered with a yellow crust, as if occasioned by an escharotic. If the pellicle is separated the ulcers bleed, and are of a livid colour at bottom.

With respect to the cure of them, it is generally attended with great difficulty, and but rarely effected until the disease is removed; but if kept clean and well managed will seldom increase, or but very slowly. The lint and plaster are tinged with a yellow colour.

Scorbutic ulcers frequently occur, and principally affect men of a relaxed habit of body, who have imbibed the scurvy from confinement to their hammocks, by preceding disease, fevers, or accidents; that is, those who have contracted the scurvy from such debilitating causes.

The ulcers in those subjects, instead of a yellow skin and hard edges, are soft. The funguses which are sprouting and livid, bleed on the slightest occasion, and are difficult to stop.

About the end of this stage the knees are sometimes

sometimes in great pain, swell, and feel very hard to the touch: besides this, a fluctuating matter is sometimes observed to lodge at one time between, and at another time above the capsula of the joint; and then if the whirlet-bone moves, which can seldom be observed on account of the swelling, there is just such a noise as arises from the grating of broken bones.

It is observable in this, and in the third stage of the disease, that ulcers almost, or entirely healed, grow raw, or break out afresh; that bones recently set break afresh, nor do they unite again until the disease is subdued.

Those extraordinary symptoms are attended with this surprising effect, that the bones which were fractured, besides their being swelled and hard, are never in any pain; and though they should continue fractured for some months, if the disease is properly treated, they will unite again as the disease is cured, without the least deformity or imperfection.

III. In the third stage of this disease, the symptoms are so very severe, that the utmost skill and attention, accompanied with the advantages of proper medicines, and the most salutary regimen, can only insure a cure; and sometimes but a respite, until the patient gets on shore to enjoy also the benefit of the land air, and gentle exercise to complete the cure,

Besides

Besides the symptoms enumerated, more or less aggravated by the continuance of the disease, palpitations of the heart, and fainting are very frequent in the last stage of the disease. Hæmorrhages, dysenteries, dropsy, and gangrene are final symptoms. In this stage the ulcers grow worse, and are soon gangrened; and the broken bones which have been consolidated for many years are dissolved again.

Physiology teaches us, says Dr. Rouppe, that a man consists of a body and mind, and that they act mutually upon each other, though we know not how they act. But we do know by observation, that the cheerfulness of the mind greatly depends on the due temperament of the body, particularly of the abdominal viscera, and on the due circulation of the fluids in them.

It is plain, that the passions of fear and sorrow in hypochondriac people arise from the obstructions of the viscera; for, as soon as a free circulation of the blood is restored in them by a skilful physician, the serenity of the mind quickly returns. Sanctorius has observed, that the mind is brisk and cheerful whilst there is a free perspiration on the surface of the body; and that, on the contrary, when the perspiration is impeded, the body is heavy and the mind sorrowful.

Sorrow very frequently precedes the scurvy, and is as often a symptom of it; therefore it is
nothing

nothing surprizing that those affections of the mind should increase in this disorder, along with the pains and obstructions of the viscera.

All secretions depend on the free circulation of good blood, which, from a viscid chyle and relaxed fibre, with great difficulty takes place in this disease: it is not to be wondered at, that many of the functions necessary to life and health should be thereby weakened, particularly chylication; for, besides the gastric, intestinal, and pancreatic juices, which are peccant in quantity and quality, the secretion of the bile is likewise retarded and diminished, from which the peristaltic motion of the intestines grow proportionably languid; from thence the inclination of going to stool is lessened. By these means the mucus which ought to lubricate the inside of the intestines, is neither secreted in quantity or quality, from whence arises costiveness.

The slight swelling of the belly, to which scorbutics are subject, and disagreeable sensation in the epigastric region, sufficiently indicate the difficult and retarded circulation of the fluids in the abdominal viscera.

And if the quantity and tenacious nature of such fluids are increased, and the causes which produced the disease continue, the fluids which cannot pass begin to lodge in the vessels, and produce dangerous obstructions, particularly where the passage of the blood is naturally slow and heavy.

By

By anatomy and dissection we are assured, that there is the most intricate and winding passages of the small vessels seated in the glands, whence the fluids being less able to pass easily, adhere and bring on obstructions in the lungs, liver, spleen, &c. evident in the dissection of scorbutic patients, whose lungs sink in water, &c. Without enlarging farther, from what has been said, the nature of the disease, and the real state of the fluids, as well as of the solids, is sufficiently obvious.

The scurvy, therefore, seems to be such a depravation of the fluids, and relaxation of the solids, as frequently arises from the want of a daily renewal of good juices, from a bad assimilation of those which are every day taken into the constitution, and from the due elasticity, motion, and natural heat of the vessels and viscera being defective; by which means a thick glutinous blood, filled with heterogeneous particles badly digested, unfit for the purposes of nutrition, and very apt to produce obstructions, is generated in the body, the functions weakened, and beginning putrefaction follows.

Dr. Rouppe, who next to Dr. Lind, we acknowledge ourselves indebted for much of what we advance in this disease (excepting what relates to our practical observations in the medicines employed, and those we recommend) gave the following with great success.

Take

Take of garlic, $\text{vj } 3$,

Squills, $\text{iv } 3$,

Camphor, $\text{j } 3$,

Salt of hartshorn, $\text{j } 3$,

Contrayerva powder, $\text{vj } 3$,

Essential oil of aniseed, or mint, sufficient to dissolve the camphor. Beat the garlic and squills well together in a stone mortar, and mix the ingredients thoroughly together into a mass of the consistence of pills.

Of which he gave from twelve to twenty grains, morning and evening. It excited a fine perspiration when the patient drank warm tea, or some aromatic infusion; when deficient in clothing, it went off by urine.

By the above course, the Doctor preserved numbers from the scurvy, and cured many that had it. He observed that this remedy sometimes caused a slight fever for a few hours, or raised the pulse, but never hurted the patient, unless in the last stage of the disease, when it produced violent anxieties, under which circumstances it must be given with great caution.

Dr. Lind recommends to those who complain, after having been afflicted with the scurvy, of a numbness and pain in the joints, or chronic rheumatic pains, to swallow a spoonful of mustard-seed bruised, once or twice a day, or to be well sweated with a medicine now generally known by the

the name of Dr. Dover's powder, taken from the quantity of half a scruple to a scruple, every night at bed-time.

This medicine has been adopted in the London and Edinburgh Pharmacopœias; by the former under the name of *pulvis ipecacuanha compositus*; in the latter it is called *pulvis sudorificus sive doveri*. We shall give each *formula* as follows:

Compound powder of ipecacuanha of the London Dispensatory.

Take of ipecacuanha,
Hard purified opium, of each in powder, j ℥,
Vitriolated kali in powder, j ℥,
Mix them.

Sudorific, or Dover's powder—Edinburgh Dispensatory.

Take of vitriolated tartar, iij ℥,
Opium, and the root of ipecacuanha, beat, of each j ℥.
Mix, and grind them accurately together, so as to make an uniform powder. In ten grains of the former, and in eight grains of the latter, there is one grain of opium.

The operator ought to be careful that the opium and ipecacuanha should be equally diffused through the whole mass of powder, otherwise different portions of the powder must have differences in the degree of strength.

This

This powder is esteemed one of the most certain sudorifics, and as such was recommended by Dr. Dover. Modern practice confirms its reputation in the rheumatism, dropsy, and sundry other diseases, where it is highly necessary to procure a copious sweat, and where it is sometimes difficult to produce it by other means.

The usual dose is from five to ten or twelve grains, according as the patient's stomach and strength can bear it. It is convenient to avoid much drinking immediately after taking it, otherwise it is very apt to be rejected by vomiting before any other effects are produced.

Dr. Morgan had great reliance on the following sudorific tincture, which we should apprehend has its uses in that intention, where a sweat is immediately and copiously required, a solution of opium being more quick, and active in its effects than when given in powder.

Take of saffron, ʒv 3,

Opium, ʒv 3,

Camphor, j $\frac{3}{4}$ ss.

Rectified spirits of wine, one pint.

Having previously obtained a tincture of saffron in the spirit of wine by digestion for four or five days, strain off the fluid part from the saffron, and add the opium and camphor. When they are dissolved, decant the tincture for immediate use.

The

The Doctor very strenuously recommends this potent tincture in comatose stupors and deliriums, common in nervous fevers, which symptoms he has always found relieved by it; in consequence of its raising the pulse, diffusing the natural heat, and exciting a critical sweat. He found also that cold sweats, deliquiums, convulsions, and twitchings of the nerves, were speedily relieved by it.

The dose from twenty to sixty drops, or a common tea spoonful, repeated as occasion requires, with the free use of wine-whey, to help to raise and maintain the sweat. It is necessary to observe, that this tincture is still more apt to be rejected by vomit than Dover's powder, if the patient drinks much immediately after taking it.

From five to seven grains of the antiscorbutic powder, No. 1, given every two, three, or four hours in any form, and to the quantity of twenty, or at most twenty-five, or twenty-eight grains in the whole, has scarcely ever failed of producing a gentle equable sweat, usually succeeded by a softness of the skin, and subsequently insensible perspiration, when all other attempts at a cuticular discharge had failed.

We have met with some cases of scorbutics, and that but very rarely, where three times this quantity has been given in the twenty-four hours before the cutis has yielded to its impression; and never but one where a warm bath, friction, and anointing

anointing alternately with oil, and the residuum of distilled vinegar had been used.

In some patients inveterately overrun with the disease, where the antiscorbutic powder, No. 1, had been taken to a considerable quantity, it was rejected by vomit, when it usually operated by stool; and if the patient was still kept warm, and made to drink frequently and freely of any warm diluent drink, particularly when acidulated with any vegetable acid, a profuse sweat broke out, although the use of the powder was not continued.

This at first was alarming, on account of the very low and weak condition of the patient, and consequently abated our ardour in following up this salutary crisis, until experience taught us that we might safely pursue it, but not beyond due bounds.

We have found the following forms very convenient for giving the antiscorbutic powders in.

The bitter tincture recommended by Dr. Lind, composed of a gallon of brandy, eight ounces of bark, and four ounces of dried orange-peel, is a very good basis for making these powders into a fluid form, with the addition of two ounces of the powdered bark of cascarilla. A gallon of brandy, or proof spirits, in six or eight days will effectually extract the essential qualities of those ingredients.

Y

Take

Take of the above agreeable tonic bitter, four pints,
 Antiscorbutic powder, No. 1, two packets,
 Antifebrile powder, No. 1, one packet,
 Bark of mazereon root, ij ℥.

Digest for two or three days, and then decant off
 for use.

From one to three or four drachms of this antiscorbutic solution, taken in a glass of wine, or cup of whey, or any other convenient vehicle in a sufficient dose. It is generally most efficacious when administered in small doses every half hour or hour, in the quantity of one scruple to a drachm.

Its effects are, to promote all the fluid secretions, particularly sweat and urine, and the former of these copiously.

Take of red or white wine, three pints,
 Antiscorbutic solution, one pint,
 Powdered root of ipecacuanha, viij ℥,
 Or wine, or tincture of ipecacuanha, one pint.

When the tincture of ipecacuanha is preferred to the powdered root in substance, the antiscorbutic wine is composed by simple commixture; otherwise the powdered ipecacuanha must be digested for two or three days with the wine and solution here ordered; and when the tincture of ipecacuanha
 is

is employed, one pint of the wine ordered may be omitted, to prevent weakening the medicine below the standard here intended, by a pint of superfluous fluid.

From about three drachms to an ounce of this antiscorbutic wine, is a sufficient dose. We have given it a name to which it is probably better entitled than any thing hitherto employed in this intention. In addition to its being a sudorific, stimulant, tonic, nourishing medicine, it is powerfully deobstruent; and a very safe and efficacious medicine in the second and last stages of the disease.

If a few drachms of it excite a nausea, the exhibiting it even in much larger doses, in a glass of lemonade, lemonade and peppermint-water, or peppermint-water well acidulated with any vegetable acid, will reconcile it to the stomach; in which case it will operate more plentiful by stool and urine than by perspiration.

There is no composition of the *Materia Medica* perhaps, that will so effectually restore the injured lungs of the scorbutic patient in the last stage of the disease; remove the cough, assist the respiration, and strengthen the tone of this delicate vital organ.

Take of antiscorbutic solution, one pint,

Antiscorbutic wine, one pint,

Antifebrile powder, No. 1, one packet,

Vinegar of squills, one pint,

Lemonade powder, iij ℥.

Dissolve the lemonade powder in the vinegar of squills, and mix them all together for use.

This extemporaneous mixture is highly beneficial in the foregoing intentions, and disorders of the breast, and seldom fails to remove, or drain off water lodged there, not unfrequently by the urinary passages. It is powerfully stimulant, and attenuates viscid juices.

Moderate doses in cinnamon-water, of from two scruples to two drachms, agree best with debilitated patients; otherwise it acts as an emetic and cathartic, to which it is always disposed in those patients, whose stomachs are much affected with tough viscid phlegm, or crude indigested matter. On such, after taking it two or three times in as many hours, in the above doses, it generally operates upwards and downwards, when it is sure to leave a salutary moisture on the surface, and eject the water upwards.

The advantages of such a medicine in costive patients in this disease, which evacuates plentifully by stool and urine, succeeded by a gentle diaphoresis, is too obvious to need any farther observations:

vations: and, happily, it is far from being an unpleasant remedy.

When rejected by vomit its effects on the bronchial and neighbouring glands in its passage up, are remarkably beneficial in correcting and restraining the morbid discharge of saliva, which indicates how advantageously it may be employed in *gargles* of the mouth and fauces.

These medicines are in a form convenient for immediately exerting their influence on the stomach and intestines, and when taken up and carried into the blood, it will be found that they have not exhausted all their influence on these organs; nor in their passage, on a viscid chyle, but still retain the power of subtilizing this stream of the blood of life also, by fitting it for all its secretions and excretions.

And this probably from their stimulus on the animal fibre, of which the vessels are made up, which may be more properly termed the canals of life, as the fluids owe their mobility to the tone and elasticity of these fibres, and of consequence, mutually act and re-act on each other from reciprocal impulse. Hence obstructions are removed, and the fluids urged through the minutest passages.

In order to enjoy the full benefit derivable from these medicines, in the absence of a nourishing regimen, which in this disease has been

pretty generally allowed preferable to physic, when we have not flesh-broths, greens, and an abundance of vegetable acids, &c. we strenuously recommend following up the exhibition of our medicines, and all others of the same intention, with the free use of warm or tepid liquids; such as gruels, panados, broths made of portable soup, and barley, or rice, or oatmeal, sowins, or flummery, tea, infusions or decoctions of the woods, or of almost any thing sapid, even if it were no better than water and a little vinegar, with a pinch of salt in it; the common beverage of the poorer sort of peasants in those southern parts of Europe, where small wines are dear. Bitters and aromatics of any kind, that will take off the insipidity of water, in default of better means, is preferable to leaving the medicines wholly unassisted to the natural depletion of the disease.

Any thing to keep the vessels full, and propel the medicines forward, and keep up that action and reaction we have been speaking of, to retrieve the languor of the circulation; thereby to promote the necessary secretions and excretions, and with them the expulsion of the scorbutic taint; alternately supporting the cuticular and renal discharges by this artificial plethora, and by keeping the patients warm clothed in the one, and cool in the other intention; and as far as is consistent with safety, to exercise them in both in the open air.

Air,

Air, exercise, and replenishing the system even in this way, will counteract the influence, and not unfrequently subdue inveterate scurvy.

When at sea there is plenty of portable soup, essence of malt, essence of spruce, lime, lemon, or orange juice, rob of lemon-juice, molasses, lemonade-powder; pickles, preserves, marmalade, portable whey, acid salts, acid juices; malt, wheat, barley, oatmeal, and rice, sourcroust, with other preserved vegetables, brown sugar, vinegar, wine, cyder, &c.

And at land the benefit of fresh provisions, fresh greens and fruits, plenty of vegetables, and all those comforts, as well as necessaries, procurable on shore, the scurvy is a disease that may be soon got under, and effectually cured by our medicines; and numerous are the instances of its being cured by regimen only.

But if in the absence of the greater part of these auxiliaries above-enumerated, and with no better assistance than the poor succedaneum that we just now proposed to replenish the vessels of a debilitated scorbutic system, our medicines in general effect a cure, they want only a fair trial to gain them admission into general use, and the sanction of the candid practitioner to render them beneficial to mankind.

That fulness of the vascular system that we have just now recommended to accompany the

exhibition of our medicines in this disease, points out the necessity there is for always being provided at sea with plenty of water, and how careful we should be in taking every opportunity of providing and preserving it in a sound state; and when in our power of changing that which is, or has a tendency to corrupt, for fresh water, on every opportunity that serves; or even the poor succedaneum we have proposed in the absence of better means, would still be wanting to the miserable scorbutics.

The great hardships which seamen are frequently exposed to from the deficiency of this article in the merchant service, which the object and value of freight induce the captains and owners to admit but a scanty pittance of. The rivalry among ship-owners, so beneficial to commerce, may be one motive to lessen the wish of their captains to take in no more than a bare allowance of provisions, and a scanty pittance of water for the voyage. Independent of the scurvy and other diseases, dreadful has been the consequences arising from such conduct to the ship's company, both with respect to hunger and thirst, which have often occasioned the loss of many valuable lives.

It is much to be feared, that that governing principle of self-interest, will in this manner always influence this service, until the legislature takes an opportunity of correcting this abuse, which

which would form a good additional clause, or amendment to the slave bill.

The keeping up this fulness of the vessels in this disease, beneficial in all climates, is more so in warm latitudes, where the waste of animal fluids are so much greater by perspiration: we might have said always, except when interrupted by the sudden application of cold and cold and moisture.

These interruptions to perspiration frequently happen, and often prove fatal from night-dews, cold moist fogs arising from swamps and marshes, to which seamen and soldiers, but more particularly the former, are much exposed.

And when the perspirable matter is suddenly checked, and returned upon the animal system, a fever, flux, or ague is commonly the consequence. If they are so fortunate as to escape these diseases, and the concentrated phlogisticated matter thrown upon the lungs and bowels, are favourably carried off by these evacuations in a considerable degree, the remaining matter of diminished perspiration diffuses itself through the whole body, and becomes then a certain degree of scurvy, and the natural outlet of diminished perspiration, the lungs, become loaded, the breath offensive, and the fauces, mouth, and gums contaminated, &c.

Defective nutrition and diminished secretion, the cause and effect of scurvy, will be always palliated,

liated, and frequently counteracted by the copious introduction of tepid fluids.

If the nutrition afforded by these fluids, from being more or less saturated with farinaceous substances, while they corroborate the constitution, should be supposed morbidly to increase the viscosity of the blood, from the nature and tenacity of their substance, this may be readily obviated by acidulating them with cream of tartar.

The property of cream of tartar, in common with most saline substances is, to attenuate and divide viscidities. All acids are saline substances: bitters, aromatics, and astringents owe these qualities to saline substance; for confirmation of which, see the astringent principle of the gall-nut, and more particularly what we have said in the section of acids.

Scorbutic dysentery. We have observed that the scurvy often associates with a flux, and must here remark, that though it should be moderated according to the strength of the patient, it would be imprudent to stop it. When it is the crisis of the disease, and the patient not so suddenly reduced in strength as might be naturally expected, it is a favourable symptom.

The safest way of managing it, is in the beginning to give gentle, but effectual purgatives combined with vegetable acids, alternated with
mild

mild astringent corroborant medicines, as the bark digested in red wine, and combined with opium.

If attended with vomiting, and great irritation of the stomach and parts adjacent, it should be treated as directed under *cholera morbus* ; first, by cleansing out the stomach with camomile-tea, slightly impregnated with opium or volatile alkali.

We cannot here avail ourselves of the assistance of mercury, from the danger of provoking an inveterate salivation, which this powerful drug never fails to excite in scorbutics, to the imminent danger of their lives. Under dysentery will be found the method of treatment proper for a flux, equally applicable to scorbutic dysentery, which does not in other respects require a different course, except in the avoiding of mercury.

Take of powdered Peruvian bark, $\text{ju} \text{ } \overline{\text{z}}$,

Cascarilla bark, powdered, $\text{j} \text{ } \overline{\text{z}}$,

Cassia ligna, powdered, $\text{j} \text{ } \overline{\text{z}}$,

Red or white wine, three pints.

Digest the powders in the wine for two or three days. Decant it before it cools, and add four ounces of tincture of bark warm also.

From one to three ounces of this medicated wine may be given every two or three hours, adding from twenty to thirty drops of laudanum to
each

each dose, more or less, according to the urgency of the symptoms.

When wine cannot be obtained, prepare and give a decoction of these ingredients; to which, when decanted, may be added an ounce of gum-arabic, and four ounces of tincture of the bark. The dose from two to four ounces, with the same addition of laudanum, repeated every three or four hours, varying the quantity of laudanum as the symptoms indicate.

Keep the intestines clean with castor-oil, or a saline purgative, acidulated with lemon-juice, or crystals of tartar. Allay the irritation of the rectum with emollient anodyne clysters, composed of six or eight ounces of decoction of linseed, or jelly of starch, one ounce of fresh suet, or half an ounce of olive oil; to which add forty or fifty drops of laudanum, more or less in proportion to the pain and irritation.

If the griping and pains in the bowels are very severe in the beginning, resort to fomentations and the warm bath.

The diet should be water-gruel, sago, or salep, with wine, to support the strength of the patient. The drink barley-water, rice-gruel, lemonade, and almond-milk. In the convalescent state light soups, and but a little animal food, until the bowels have in a moderate degree recovered their tone;
then

then such as are least stimulating, and most nourishing.

When the corroborant electuary ordered in dysenteries, page 132, omitting the antifebrile powder, No. 2, may be administered, which will assist much in restoring the patient, and confirming the cure.

A *dropfy* is another unfavourable concomitant of the scurvy, and should be treated as laid down under that head, allowing for the great debility of the patient, who is usually seized with this additional attack in the last stage of the disease.

These medicines recommended in the scurvy for determining the scorbutic acrimony to the skin, and detaching it from thence by transpiration, are well suited to subdue the dropical swellings of the legs, and remove the water from the chest.

Considerable quantities of water frequently accumulate in the breast, which occasion violent and incessant coughing, with a constant spitting of tough phlegm, and sometimes a difficulty of breathing.

Œdematous swellings of the legs accompany these disorders of the breast, and are the surest signs of water being in that cavity, and not uncommonly communicate with each other, although it must be owned such passages are unknown to anatomists.

The

The consumptive, asthmatic, and dropical complaints in the last stage of the scurvy, called the scorbutic complaints of the breast, are relieved by blisters applied to the seat of the disease, with a milk and vegetable diet, fruits, and acids.

Expectoration at the same time promoted by very small doses of oxymel of squills, administered in solutions of spermaceti; ease and respite from the cough by gentle anodynes every night. This treatment, accompanied with a mixture of the antiscorbutic medicines before prescribed, bids fair to effect a cure.

When scorbutic ulcers attend, if of long standing, and sufficient provision being made for healing them up, as laid down under that head, issues near the part, and an electuary of prepared crude antimony, accompanied with a decoction of the woods, alternated with the liberal use of the antiscorbutic powder, No. 1, in such forms as may be found most convenient, will in general answer the intention; and in those intolerable pains frequent at this time, will be highly beneficial, either alone or combined with the antifebrile powder, No. 1.

When the legs are swelled and œdematous, gentle friction with warm flannel, and fomentations with a mixture of the antiscorbutic wine and proof spirits, alternated with the application of the residuum of distilled vinegar after each friction with
the

the warm flannel. And if the swelling is small, soft, and not very painful, after friction and fomentation, roll them up with an easy bandage from below, upwards. Repeat these applications night and morning.

In *dropfical cases* where the swellings remain obstinate, blisters applied a little above the ankle of both legs will evacuate the water without any danger of a mortification of the part: we are warranted in this practice by Doctors Lind and Rouppe. The pains of the limbs are greatly relieved by bathing, and gently rubbing in the warm residuum of distilled vinegar; hardness and contractions by subsequent anointing with warm oil, and lastly with the yolk of an egg beat up in half a pint of scorbutic wine, which for external use may be prepared with white wine.

The former of these gentlemen, when the constitution had been tolerably sound, has often cured very obstinate dropsies by exciting a gentle salivation, with a scruple of *pilula mercuriales* taken every other night, and by giving on the intermediate days, a mixture of squills and *sal diureticus*.

He relates from Mr. Murray, that a copious salivation has been unintentionally induced even by well-prepared *Æthiop's mineral*, in scorbutics, who found a large dose of *sal diureticus* speedily remove it. He makes this remark, on recommending an electuary of crude antimony and
Æthiop's

Æthiop's mineral, in the cure of *scorbutic ulcers*. Dr. Lind himself, when he found the gums sufficiently hardened, has put scorbutics under a very gentle course of mercury, which he generally extinguished with a small quantity of balsam of sulphur, and found it to succeed well, when the intention was not to raise a copious salivation. He ordered a bottle of decoction of the woods to be drank every day at the same time. This, by promoting perspiration, assisted the operation of the mercury.

If, in either of those combinations of mercury and sulphur, the mercury is saturated with sulphur, no salivation can take place, from the neutral compound. But that has not been the case from salivation being excited, as we know of nothing in the human system, that could have decomposed it; hence only the unsaturated part can have any influence.

Surely, when the practitioner judges it safe to venture on salivating a convalescent scorbutic, it will be best to adopt the most certain, and least irritable mode of administering mercury. These are the mildest mercurials, as Plenck's solution of mercury, or mercury and gum-arabic in any form, or calomel. The more acrid mercurials, having a tendency to irritate the bowels, and run off by stool, or to escape through the cuticular pores; though they may have their use in some cases, and
in

in such constitutions as are neither so irritable or debilitated, cannot in general have a place here, as an unheeded application of cold may also determine them to excite a morbid flow of saliva, when nothing more was meant, than, by keeping the mouth fore, to assure its operation on the system, by this testimony of its having entered the lymphatics.

But could not this be better effected by the application of mercury in the form of vapour, in the case of obstinate ulcers, or for the resolving an indurated gland, &c. and with less danger of morbidly affecting the salivary glands, in patients already so severely and recently afflicted in the mouth and gums?

It must be allowed, that this mode of applying mercury has its inconveniencies; it is so very subtle and sudden in its effects, as not to be trusted in any but medical hands, who know how to avail themselves of its immediate action on the affected parts.

Cinnabar, a compound of sulphur and mercury, the substance usually employed, from being resolved into fume; the mercury and sulphur are disunited, on which the activity of the medicine is supposed totally to depend. But we are of opinion, that part of the sulphur, burned during the fumigation arising in vapour, is rendered acid, and from its re-union in this form with the mercury in a state of vapour also, renders it corrosive; to which

we may, in some degree, attribute its beneficial effects on obstinate ulcers. Here the mercury may be considered as in a kind of saline vapour or fume, partially caustic, and acting as a peculiar kind of escharotic. Its action on the circumjacent sound parts may be prevented by previously oiling or greasing them, which at the same time prevents its entering the system by absorption.

Mercurial pills seem, in most cases, entitled to a preference; not that they are less apt to excite a salivation than mercury exhibited by unction, or any other means; but that the quantity of mercury introduced into the system admits of being more accurately ascertained; especially when the degree of solubility in the stomach can be also ascertained by the mercury having been combined with vegetable mucilage, which also sheaths and moderates its action on the guts.

Experience has produced many instances of real advantage, in employing mucilaginous matters along with mercurials, in preventing diarrhœa and salivation to a remarkable degree: so far Mr. Plenck's solution of mercury is a good medicine.

Mr. Plenck of Viena's mercurial solution.

Take of purified quicksilver, j. 3.

Gum arabic, ij. 3.

Beat

Beat them in a stone mortar, adding by little and little, distilled water of fumitory, till the mercury thoroughly disappears in the mucilage. Having beat and mixed them well together, add by degrees, and at the same time rubbing the whole together, syrup of kermes half an ounce, distilled water of fumitory eight ounces. It is always most expeditious to triturate the mercury with the gums in a state of mucilage. The dose from half a spoonful to one or two spoonfuls; always agitating the phial well before taking the solution.

Mr Plenck's mercurial pills.

Take of the purest quicksilver, j. 3.

Gum arabic in powder, ij. 3.

White sugar, ij. 3.

Pure water, a quantity sufficient to make the gum into a strong mucilage, and as much powdered liquorice as will make the whole into a mass of the substance of pills; of which make ninety-six pills, each of which will contain five grains of crude divided mercury. From three to five or more may be given in the twenty-four hours; that is, one or two in the morning, and two or three at night. This form may, upon the whole, be considered, although not a powerful, yet, in many cases, an useful preparation.

Calomel, although the mildest of the saline
Z 2 preparations,

preparations, is a more general stimulant in the system than they: from this general stimulant power it may be readily supposed to affect the intestines more considerably than they do, and, in fact, is found, in many cases, more readily to excite looseness than they do.

Calomel cannot be considered as well adapted for those inveterate and obstinate cases, in which a long and gradual use of mercury is requisite, and to overcome which it is necessary that a considerable quantity should be accumulated in the circulating system.

Many substances that possess the most active powers in nature, have these entirely destroyed, or totally altered, from a combination with other substances. This holds remarkably of mercury itself, when united with sulphur. Taken separately, they are each of them of a most active nature; conjoined, the mixture becomes inert, or acts merely as sulphur. We are naturally led, from what has been delivered, to say something further on the

Treatment of Ulcers.

From what we have experienced, and from what we can learn, we are led to believe, that those obstinate scorbutic ulcers, which have led us into so long a discussion of the mild mercurials, are more expeditely cured by our antifebrile and antiscorbutic powders, No. 1, with the occasional addition
of

of No. 2, of the latter, opium and bark. And in most cases, by the sole use of those powders, unassisted by any other medicine.

To begin with those of the mouth; we have already recommended the liberal use of certain lozenges and gargles, before enumerated, to which we beg leave to refer, and with which the ulcerations of the mouth and gums should be frequently cleansed. The fungus excrescences not relieved by this means, must be removed by the knife. And where the ulcers appear deep and spreading, they are to be touched with spirit of vitriol, as strong as the patient can bear it, which in general will check their progress.

Ulcers on the legs, or any part of the body, require similar treatment; gentle compression, removal of the fungus flesh, with lotions of the same composition as the gargles. Few applications are of greater service in the healing superficial ulcers than dressings of lint dipt in a solution of corrosive sublimate, in the proportion of half a grain to an ounce of water, with a very small addition of compound spirit of lavender, to give it an agreeable smell and scent. Perhaps no external application is equal to solution of the antiscorbutic powder, No. 1 and 2, or a mixture of them, sprinkled on the large ulcers, to prevent the spreading of some and reduce the callous lips of others.

Those troublesome wandering pains, common to scorbutics, which indiscriminately seize the soft and hard parts, sometimes with, at other times without a swelling, although originating in the same cause, sometimes require a different treatment, either from the different parts they attack, or the length of their duration.

But the pains which affect both the soft and hard parts, usually yield to a proper diet of the nutritive kind and our diaphoretic remedies. If they should not, blisters applied to the parts affected, if above the knees, commonly prove successful.

It is better to avoid putting blisters on the legs in this disease, from the frequency of their being followed by ulcers. Ulcers on the legs being much more difficult to cure in these, than in other parts seated higher up.

They do not so effectually relieve the pains in and about the joints of the knees, from a vitiated serovia, or extravasated humours, corroding the circumjacent parts. Whether between the capsula of the joint, the joint itself, or between the periostium and the bone, should be let off by a pending passage made by incision, before the bone is affected and caries has formed. But how ulcers, with or without caries, are to be treated, is the province of surgery.

Altho' the antifebrile and antiscorbutic powders

ders are so successful in relieving pain and spasm, and in usually healing internal and external ulcers, whether associated with fevers, fluxes, or the scurvy; yet they cannot be expected to be infallible.

The incurable state of ulcers, proceeding from the scurvy, and other causes in hot climates, may probably depend on the defect of a fresh supply of assimilated juices; and from the unfitness of a seaman's food, and his weakened digestion being unequal to the production of a good wholesome assimilable chyle, a proper suppuration is prevented by the depraved state both of the vessels and fluids. We cannot expect the renewal of solid parts, in which healing consists, where both the instruments and materials of its formation are so defective. Hence the smallest pimple, or slightest scratch, more especially on the lower extremities, usually spreads, and becomes an incurable ulcer.

Sores, in whatever way produced, spread quickly, and form a large ulcerated surface. They give little or no pain, which appears to be owing in a great degree to the warmth of the air; for cuts and wounds are found to give much less pain in a warm than in a cold climate.

The appearances of the ulcers are continually varying; at times they acquire the look of a healthy sore, send forth strong and luxuriant granulations,

granulations, and begin to skin over ; but one night will often put an end to this flattering prospect. The granulations turn flaccid, or even mortify in part ; the portion skinned over ulcerates afresh, and the sore becomes larger than ever. After a time it will again put on a healing appearance, and repeatedly run through the same stages. The bones at last become carious, and if the limb be not amputated, or the patient returned to Europe, he becomes hectic, and, after lingering a considerable time, dies. Dr. Hunter further observes, the general result of all his experience was, that ulcers of some standing, and of a considerable size, in the lower extremities, could not be healed in Jamaica by any means they were acquainted with. Instead therefore of wasting time in fruitless trials, every opportunity was taken of sending home the men with ulcers along with the other invalids. The change of air and climate produced great effects ; many of the ulcers healed on the passage, and all of them soon got well after their arrival in England, unless where the bones were carious ; and of these last many recovered, after losing large portions of the tibia by exfoliations, or were finally restored to health by amputation of the diseased limb. This operation was indeed sometimes performed on the island, but never except under the most urgent circumstances, for it seldom succeeded,

ceeded, owing to the *locked-jaw*, which generally came on in a few days, and proved fatal. See *locked-jaw*.

It may be remarked, said Dr. Blane, that altho' all sores and wounds in the foot and legs are difficult of cure, in a hot climate, I have observed, that where the constitution is good, these in the thighs, arms, and trunk and head, are rather more easy of cure than in Europe, and that parts divided by incision very readily unite by the first intention. In reasoning upon this, it may be said, that as healing depends on a certain degree of vigour in the powers of life, this should not err either on the side of excess or defect. If it is too great, as in the case of a hale, plethoric constitution in a cold climate, too much inflammation is apt to be excited; if too feeble, as happens in a hot climate, in the lower extremities, which are far removed from the source of life and circulation, the salutary effort is not strong enough to generate new organized parts. But in the trunk of the body, in such a climate, the powers of the animal œconomy are in that just medium which is most favourable to this operation of nature.

Ulcers in patients labouring under the scurvy have been successfully cured by the antifebrile powders, No. 1, administered internally, and judiciously combined with the dressings.

Ulcers proceeding from various causes, not
scorbutic,

scorbutic, of long standing, and given up as incurable while the patient remained in a hot climate, with thick edges, large funguses, and an ichorous discharge, that had rather been aggravated than relieved by a course of mercury, and that had from their irritation and constant drain, worn out and emaciated the patient to the lowest ebb, were affected in a wonderful manner, equally unaccountable and incredible, by the internal and external use of these powders. Sometimes No. 2, at other times No. 1. succeeded best; and not unfrequently the alternate use of both succeeded still better, in calming the morbid irritability, procuring ease and rest, and producing a salutary change in the fores. In many cases their effects were immediate, in others more gradual, and in most that fell within our observation, permanent in their effects, and ended in a cure.

The general mode of exhibiting them was a few grains at morning, and a double portion at night, gradually increased according to the urgency of the symptoms; and in some cases to the quantity of xx grains in the morning, and xx grains at night, which is two-thirds of a packet in the twenty-four hours. In most, the cure was performed without any sensible evacuation, except by urine and perspiration. In all, the discharge of the ulcers was changed from a putrid sanies to a pus, more or less laudable in appearance;

appearance; and the callous edges, and funguses of the ulcers, soon yielded to the dressings, during the internal course of the antifebrile powders.

Ulcers, whether in patients scorbutic, or not, that were not absolutely cured, were not only stopped from spreading, but reduced in size and appearance, and the patient relieved from pain and inquietude; but were all brought to a laudable discharge, and the patients surprisingly recovered their flesh and strength, under discharges, by no means inconsiderable, from their sores. For further particulars, see *wounds*, and *amputations* under *Tetanus* and *locked-jaw*. And also under the diseases of Negroes, who successfully dress wounds, ulcers, &c. with palm-wine and lime-juice, and palm-oil and lime-juice, &c.

A very particular symptom of the scurvy is mentioned by Mr. Telford, in his letter to the physician of the fleet. Of four patients, he had two that were almost blind towards evening, accompanied with a head-ach, vertigo, nausea, and a sense of weight about the precordia. The pupil was then extremely dilated, but contracted readily when presented to a strong light.

Two of them had the scurvy in a high degree, one of them slightly, and the other seemed entirely free from it. He observed, that he was not then well acquainted with the nature and cure of this disease,

disease, which he believed was called *Nictalopia* by some systematic writers.*

He administered an emetic, that brought up a great deal of bile, which relieved both head and stomach; that encouraged him to a repetition, which was also attended with great benefit. He applied blisters behind the ears, and gave bark and elixir of vitriol, with the antiscorbutic course.

He had 114 scorbutic men, who contracted the scurvy in a long cruize at sea, recovered by the use of limes. A pint of wine mixed with an equal quantity of water, made agreeable with sugar and tamarinds, was served to each man daily.

† The scurvy did not make the same progress in the ships at anchor as at sea. The difference arose in having plenty of fresh water, not only to drink, but to wash their clothes; cleanliness tending greatly to ward off the scurvy, though fresh meat nor vegetables were not procurable. Sugar, a very good antiscorbutic, was obtained by the men, in exchange for their salt provisions. Added to this, the dismal uniformity of a sea life, favourable to indolence and sadness, hastens the progress, and aggravates the systems of the scurvy. Whilst in port, a change of scene and variety of objects, by chearing and recreating the mind, averts the disease.

* Dr. Nathaniel Hulme.

† See this enlarged on in the conclusion.

Wine,

Wine, molasses, sugar, *souer-croust*, and essence of malt, are equally good as preventatives, and curatives in the sea scurvy. Mr. Smith, surgeon of the Triton, obliged his scorbutic men to eat raw potatoes sliced with vinegar, with great benefit.*

The acid fruits, or their juices, especially of limes, lemons, oranges, shanodocks, pomegranates, casheew-apples, and all the subastringent fruits; and all the culinary vegetables in a fresh state.

Malt, spruce, or even turpentine (the two last make a wholesome antiscorbutic drink,) with sugar or molasses and water, perhaps superior to the former, particularly in cold latitudes, as observed by Dr. Clerk. Yeast in a portable state, in cakes or bladders, may be wanting, especially in a cold climate; in a hot, this can never be the case, as beating the materials and water up with a birch broom at first, and repeating it occasionally, will excite a fermentation, the dregs of which will serve for any future brewing. A small quantity of *palm-wine* will promote a vigorous fermentation. The treatment is similar to brewing in a family way.

AS TO THE PRESERVATION OF ORANGE, LEMON
OR LIME-JUICE, &c.†

The orange merchants in London preserve

* Dr. Blane.

† Dr. Nathaniel Hulme.

orange-juice very successfully, for several years together, by the following easy method: they take ripe fruit, no ways damaged, and squeeze it very dexterously over the head of a large cask, which is hollowed out for the purpose, and pierced full of small holes, that the juice may run through, and the seeds remain behind. When the vessel is near full, they take up the juice, and pass it through a hair sieve, and put it into a rum or brandy puncheon, set on one end, for the convenience of drawing of the clear juice from the sediment, provided with a cock some inches above the bottom, and vent spile at top.

The latter end of January, or beginning of February, is the best time for squeezing the juice. In about three or four weeks, the juice purifies itself, by throwing to the bottom a thick sediment; and raising up to the top an uniform tough scum, two or three inches thick; from between which, the clear juice is drawn off.

How long the simple juice, prepared in this way, will keep at sea in casks, I cannot say; but in all probability, it will keep as well as most kinds of wine. Of this juice, an ounce and a half a day is presumed to be a sufficient quantity. *Kramer*, a man of great experience in the Scurvy, directs the pulp and juice to be preserved with sugar, and
given

given to the quantity of three or four ounces a day, in the form of marmalade, lemonade, or mixed with whey.

With regard to keeping in casks, Bosman says, they buy lime-juice at twenty-five shillings an aum, at St. George d'Elmina, the Dutch settlement on the Gold coast, and send annually two hundred aums a year to Holland.*

It is necessary to observe, that the juice of oranges and lemons should never be mixed or prepared together in the same vessel, but always be kept separately. The juice of lemons, managed in this manner, though it remains quite clear and good, yet does not preserve its flavour so well as orange-juice; for which reason, the dealers in these articles universally preserve the orange-juice.

ROB OF LEMON OR LIME-JUICE, &c.

Dr. Lind proposes evaporating the watery part, so that the acid of twelve dozen of oranges or lemons may be put up in a quart bottle for use. For which purpose it may be depurated in a similar manner to that described, and the clear juice evaporated, either by the heat of the sun in a hot climate, or by the assistance of a fire in a cold one. When cool, it should be of the consistence of syrup; this he calls the rob of lemon or orange-juice;

* Bosman's History of Guinea.

some of which rob, or extract, he kept by him for four years.*

This rob is nearly as good for making punch or lemonade, as the fresh juice. To preserve the fragrance of the fruit, he found a small quantity of the outer rind or peel, added to the rob just before it was removed from the fire, quite sufficient; in-somuch, that the nicest taste could not distinguish the difference. The medical qualities are not at all impaired, but only concentrated into one-eighth of its bulk. Two dozen of good oranges weigh five pounds four ounces, yield one pound nine ounces of juice, and make five ounces of rob, or extract, in bulk less than three ounces of water; so that the acid of twelve dozen of oranges or lemons may be put into a quart bottle, and preserved for several years.†

It is a common practice in Africa and the West Indies, to expose the depurated juice of lemons, limes or oranges, to the heat of the sun, to evaporate the aqueous parts for the use of their friends to take to sea. The heat of the sun soon ex-

* If this operation be carefully performed by a very gentle heat, as the juice heats, the mucilage thickens and separates in the form of flocks; part of which subsides, and part rises to the surface; these must be taken out: the vapour that rises is not acid.

† Dr. Lind on the Scurvy.

hales

hales the superfluous watery part. When large quantities are wanted, a sand-heat and a shallow glass vessel will be the most expedite process; and when cool, let it be well corked up in bottles for use.

DRY LEMONADE.

To the depurated juice of lemons, limes or oranges, evaporated to the consistence of syrup, rob, or extract, add six times the weight of loaf sugar, and keep the whole stirring till perfectly dry; by this means the mass will be reduced to a fine powder, which should be bottled up when cool. This lemonade powder may be rendered still more elegant, by rubbing the fruit against the loaf sugar, and as it receives colour and imbibes the essential oil of the peel of the fruit, scrape it off with a knife from the piece of sugar, and repeat the rubbing with fresh fruit until enough is obtained to flavour the quantity of lemonade powder intended to be made. This fragrant powder is to be thoroughly mixed with the lemonade powder before it is put up for use.

The same may be done with the powder sugar impregnated with the essential oil, with respect to the rob, when intended to be preserved in a liquid state.

The depurate juice may be also impregnated

A a

in

in this manner, with this fragrant aromatic essential oil imbibed by the sugar, when the process is intended to be carried no farther.

In a cold climate and without heat,

The lemonade powder may be obtained in great perfection by exposing the depurated juice to about seven or eight degrees of cold below the freezing point. The aqueous parts will freeze, and the ice may be removed as it forms; if the process is continued until the ice begins to exhibit signs of acidity, the remaining acid will be found to be reduced to about one-eighth of its original quantity; at the same time, its acidity will be eight times as intense, as is proved by its requiring eight times the quantity of alkali to saturate an equal portion of it. This concentrated acid may be kept for use, or if preferred, it may be made into dry lemonade, by adding six times its weight of loaf sugar in powder:

The above process may be used when the acid of lemons is wanted for domestic purposes, and for medical use, as in the intention proposed for the relief of the scurvy, because they leave it in possession of the oils and other principles on which its flavour and fragrance peculiarly depend; but in chemical researches, when the acid itself is required

to

to be had in the utmost purity, a more elaborate process must be used. See this process at the latter end of the remarks on the bile and application of acids, in the cure of fevers and the scurvy, with observations on vinegar, &c. *Page 210.*

ACID OF TARTAR.

To one pound of cream of tartar dissolved, or boiled in six pounds of water, add a quarter of a pound of strong oil of vitriol, by little and little at a time. When a complete solution is obtained, the fluid will then contain disengaged acid of tartar, together with vitriolated tartar, or the neutral salt, formed by the union of the vitriolic acid, with the vegetable alkali of the cream of tartar. The vitriolated tartar, being a salt of sparing solubility, will be precipitated by continuing the boiling: when the liquor is evaporated to one half, it is to be filtered; and if upon further evaporation any thing more is precipitated, it must be filtered again. The clear liquor being then reduced to the consistence of a syrup, and set by in a temperate or rather warm place, will afford fine crystals of tartareous acid, equal in weight to half the cream of tartar employed.

If too small a quantity of vitriolic acid has been used, part of the cream of tartar will not be de-

composed, but will separate from the liquor along with the vitriolated tartar; it is better therefore to use too little, rather than too much oil of vitriol.

The crystals of acid of tartar do not change by exposure to the air; they are much more soluble in water than cream of tartar itself.

These acid crystals are convertible into vinegar, by digestion with water and ardent spirits.

SAWERKRAWT, OR ZOURHOOL.

In the month of November, take the white winter cabbage, cut it into quarters, and remove the stalk that runs in the middle of it, then shave it with a large sharp knife into as thin slices as possible; the Dutch, who are great consumers of *four-cROUT*, have an instrument for the purpose; the thinner the cabbage is sliced, the better it will be preserved.

Grease then the inside of the cask, so as to stop up all the pores, and cover the sides and bottom with a thin paste of leavened flour; on the bottom strew first a little salt, then fill up the cask with alternate layers of salt and sliced cabbage, until it is near full. The quantity of the salt between each layer of the cabbage must be very small, and care should be taken that each layer of the cabbage, up-
on

on being put into the cask, be well beat, and strongly pressed down by a wooden pestle or mallet, so that 200 cabbages may be put into a small cask; on the uppermost layer of cabbages put a cloth, and immediately above that a tight wooden cover, so as no air may enter; above this cover, put a considerable weight to press the cabbage down.

When it has stood thus for a fortnight, and the juice of the cabbage has collected at the top and becomes sour, dip a clean cloth in the juice repeatedly, and wring it out, until in this manner all of it is removed; then after being washed, the former cloth and cover are to be replaced, and the pressure renewed, which operation is to be repeated occasionally as the juice becomes offensive, pouring each time a small quantity of water on the top, in place of the offensive juice, which is thrown away.

This sour-cabbage will keep good for an East India voyage; Dr. Lind, from whose treatise on the scurvy we have extracted it, sent a small cask of it to Newfoundland, and in eight months afterwards, had part returned good and well flavoured.

With *portable soup* and this sour-crust, a good broth can be made at sea, nearly equal to the hospital soups made for the recovery of our scorbutic patients. A mess of this boiled in the sailors

pease twice a week is a good preventative, and the above soup a good restorative for the incipients and convalescents.

The frivolous objection of its being salt, and for that reason septic, is ill founded; the contrary is the truth : vegetables preserved in this manner are sour, tart, or agreeably acid, and prove an antiseptic corroborant food. A good many casks of this, and a few boxes of portable soup, are a requisite addition to the *viſtualling bill* of every ship bound on long voyages and long cruises.

Vinegar is an agreeable wholesome condiment, and a mild efficacious medicine, in all kinds of inflammatory and putrid diseases, either internal or external; in ardent bilious fevers, pestilential and other malignant distempers, it is recommended by Boerhaave, Lewis, Far, and many others of note, as one of the most certain sudorifics, antiseptic, stimulant and tonic medicines.

Fainting, vomiting, hiccoughs, hysterical, hypochondriacal and lethargic complaints, are frequently relieved by vinegar applied to the mouth and nose, or received into the stomach.

Lethargic persons are oftener excited more effectually by vinegar blown into the nose, than by far the more pungent volatile spirits. Boerhaave observes, that this acid in a peculiar manner counteracts

teracts the effects of spiritous liquors.* It has been used internally in the rabies canina.

As a menstruum, it is often usefully employed in extracting the virtues of other articles: In combinations, it composes some potent medicines. In every point we can view it in, it is so generally useful at sea, that the preserving it for a length of time is an object of some importance.

Neumann observes, that vinegar that has undergone a considerable degree of heat, will not keep long. A modern chemist, ingenious in his mode of enquiries, successful and happy in his discoveries,† proposes to preserve this useful acid in a sound state, by exposing it to a boiling heat.

He, after observing, as many others have done, that distillation renders vinegar unchangeable for years; this it does by separating it from its gross mucilage, &c. that it may be concentrated by freezing, and lastly, that keeping it close corked up in bottles from access of air, which he at the same time rejects, from the vinegar spoiling when each bottle is opened, except kept filling up, which is troublesome, proposes the following easy method

* The same opinion for a long time prevailed with respect to opium. John Leigh, M. D. in his treatise on Opium, found that vinegar, given previous to the opium, but not after it, counteracted its effects on the stomach. It is not improbable that the same may apply to spiritous liquors.

† Seebeck.

Of preserving Vinegar.

It is only necessary to boil your vinegar for a quarter of a minute over a strong fire. It is then to be immediately bottled up; or the bottles ready filled may be put in the kettle of water on the fire; and after the water has boiled for about an hour, the bottles are to be taken out, and corked up immediately.

The vinegar, he observes, thus boiled, keeps for several years, even in half filled bottles, or in the open air, without growing turbid or mucilaginous: it likewise may be used with advantage for pharmaceutical purposes, instead of common vinegar, which if not distilled, soon grows turbid, and loses its acidity.

We shall not presume to comment on this easy process, as we are no admirers of analogous reasoning on what has been or can conveniently be reduced to experiment; especially on the experiment of so faithful a recorder of facts as our author.

Instead of which, I am free to acknowledge the infertility of my genius: though much occupied in the study and manufacture of vinegar, it is more than probable that this simple method would never have occurred to me.

Yet this is the common process of every housewife, in the preparation of pickles for family use. This puts me in mind of Columbus's egg!

Our

Our carboys, employed for holding oil of vitriol and the mineral acids, fitted with ground stoppers, and packed as usual for exportation, that hold from ten to fifteen gallons, promise to afford a commodious containing vessel, and safe package for shipping the boiled vinegar, either to be used at sea, or transported to any distance whatever.

Dr. Lind somewhere observes, that a few slices of lemon give a cask of vinegar an agreeable lemon-juice flavour. This being the case, nothing can be more easy than to impregnate the boiled vinegar with such a flavour.

Decoction of the woods.

Take of guaiacum saw-dust or shavings $\text{iiij } \mathfrak{z}$

Sarsaparilla root, sliced and bruised $\text{ij } \mathfrak{z}$

Bark of the root of sarsafra,	} of each, $\text{iv } \mathfrak{z}$
Bark of the root of mezereon.	
Cascarilla bark, powdered.	

Liquorice root sliced and bruised, $\text{ij } \mathfrak{z}$

Water six quarts,

Macerate for six or eight hours in a gentle heat, then slowly boil the fluid down to six or eight pints. Add towards the end of the boiling the mezereon and sarsafra roots, with two ounces of cassia ligna powdered or well bruised.

This decoction, given from half a pint to a quart a day alone, or diluted with barley water, water gruel, rice water, or negus, for those to whom it may be too strong, will greatly promote the diaphoretic quality of our medicines, and is of itself
a good

a good antiscorbutic, deobstruant purifier of the blood, and promoter of the natural excretions.

Dr. John Clark, in his Practical Observations on long Voyages, and in hot Countries, gives the following methods of making *Porter Beer* and *Tartar Ale*.

Porter Beer.

Take of porter two quarts.

Grated ginger, ij 3.

Soft sugar, viij 3.

Water four quarts.

Put the liquor into strong bottles, and cork them well. One bottle may be used daily for drink, and another made into panado for breakfast and supper. This was recommended by his late friend Sir John Silvester.

Tartar Ale.

Take of crude white tartar, powdered, iij 3.

Juniper berries bruised, iv 3.

Lemon peel, j 3.

Ginger in powder, ij 3.

Cloves in powder, j 3.

Coarse sugar, v lb.

Water six gallons.

Boil them half an hour, then pour the whole into a tub; and when nearly cold, pass the liquor

quor through a strainer into a six gallon cask. If it do not soon ferment, add half a pint of porter. It may be given a few hours after the fermentation has begun, from one pint to two quarts daily.

Although it does not appear that either of these drinks fully answered Dr. Clark's expectations, they no doubt afford a wholesome antiseptic stimulant beverage. The first was made fresh every day, and by mixing a bottle of the old liquor of the first ingredients, its briskness was much heightened. It soon runs into fermentation, and generates much fixed air.

* Among the various theories concerning the cause of this disease, and the mode of operation of its remedies, none, when I entered upon the practice, seemed so ingenious and plausible, as that of the late benevolent Dr. M'Bride.

The scurvy, by the united consent of physicians, was considered a putrid disease. By a number of well conducted experiments,† he endeavoured to prove, that *fixed air* is the cementing principle of all bodies, vegetable as well as animal; and that living animal substances become putrid from the escape of this subtile vapour.

* *Dr. John Clark's Observations on the Scurvy.* Book II. on Long Voyages, &c.

† M'Bride's Experimental Essays *passim*.

The cure of the scurvy was also known to yield to nothing certainly, but to fresh vegetables, whether *acid* or *alkaline*, *mild* or *acid*, *sweet* or *bitter*. By various experiments, this ingenious physician found that vegetables, however opposite their sensible qualities appeared, all possessed one common property, *viz.* that, when mixed with animal substance, and placed in a proper degree of heat, they ran into fermentation, and threw off a considerable quantity of *fixed air*, endowed with the power of correcting putrefaction, and restoring soundness to corrupted animal substances.*

Having by experiments also made it probable, that the cure of the scurvy depended entirely upon the fermentive quality of the vegetables employed, he judged that any substance, proper for food, abounding with fixed air, which would keep long sound, and take up little room at sea, would prove a convenient and powerful antiscorbutic.

Wort, or an infusion of malt, from containing a great quantity of fixed air, he supposed similar in its qualities to fresh vegetables; and therefore proposed *dried malt* to be kept in constant readiness on board ships as a remedy, whenever this destructive disease made its appearance.

Captivated by the ingenuity of this theory, I was glad to be informed, when the scurvy appeared

* Vegetables derive this advantage from their native acid and their fixed air. See page 250 to 260, &c. of this Treatise.

amongst the crew of the Talbot off the Cape, that there was a cask of malt on board; and still more so, to find it was perfectly sound. As the quantity seemed sufficient only to give a full trial in a few cases, six patients were selected, and the wort was made by pouring three measures of boiling water on one of fresh ground malt. After standing four hours, the liquor was strained, and one bottle given to each patient; which, as it agreed perfectly with the bowels, was soon increased to two quarts daily.

There being no live stock on board, the dinner of the patients consisted of boiled rice with sugar, and a little wine; and for breakfast and supper, they had each a pint of panado, made with powdered biscuit and wort.

Two of the patients continued the wort and the above regimen regularly for eighteen days. I narrowly watched the progress of the symptoms; but had the mortification of observing the distemper to increase daily, and the patients to become weaker and worse than those who were put upon other articles of regimen.

Having a little lemon-juice on board, the patients whose cases were farthest advanced, after they gave over the wort, were allowed two spoonfuls thrice a day, and some of them along with the lemon-juice were ordered one drachm of bark every
four

four hours. Whilst this acid lasted, the disease remained stationary; but the weather being extremely stormy, the hammocks wet, and the ship dirty, no progress towards recovery could be perceived, nor indeed expected.

All the others ill of the scurvy had the usual medicines which are given at sea, calculated, indeed, only to support hope, or at most, to palliate some particular symptoms; the chief of which were gentle laxatives when costive, diaphoretics at bed-time, bitters with vitriolic acid, fermentations, and antiseptic gargles.

They were supported with as cordial a diet as the ship could afford, such as boiled sago and rice, with sugar and wine: the last article was, indeed, distributed with the greatest liberality and humanity by Sir Charles Hudson, and *mango shrub* was given to several by the officers, in such portions as was deemed proper.

The disease, however, daily increased; and when we came to anchor at Madagascar, many were so weak, that it was judged unsafe to send them on shore for some days. But still it afforded great consolation, after a voyage of nineteen weeks, and a considerable part of the time passed in the cold tempestuous latitudes off the Cape, that we were able to preserve the lives of the sick, and that none fell a victim to this virulent distemper.

In

In our run between St. Helena and England, in the same voyage, two scorbutic patients were cured at sea by the rob of oranges, which was prepared at Madagascar, taken daily in the form below.

Take rob of oranges, half an ounce.

Mountain wine, a pint.

Refined sugar, two ounces, mix them together, and take one quart four times a day.

From the faithful relation of this candid ingenious physician, Dr. Clark, we are supported in our opinion of the necessity there is for bringing forward a medicine or medicines, to counteract the malignancy of the scurvy at sea, that shall approve itself the most sanative and least expensive *bracer* of the animal fibres, composing the relaxed solids of debilitated scorbutics, equally fit to *correct* the broken down crasis of the blood, and that may check the too abundant degeneracy of the *septic animal process*, and promote the mutual and natural action and reaction of the solids and fluids upon each other: for upon the whole, as truly observed by Dr. Lind, the case of scorbutic patients appears plainly to be a weakened and relaxed state of the solids; with such a condition of the blood, as naturally proceeds from a want of proper nourishment, and from a stoppage of perspiration.

The frequent œdematous swellings of their legs,
sometimes

sometimes of their face, and of other parts of the body, denote the state of their solids; their bleeding gums and ulcers, the condition of their blood, and their spotted dry and rough skin, prove a stoppage of perspiration.

Now in such a state, continues the Doctor, *what is to be done?* their perspiration cannot be well restored by the common sweating medicines; for though they may give a momentary relief, and in some few cases, a crude humour may be thus pushed through the skin, even in so relaxed a state of the solids, yet such a humour goes off generally by urine.

Nor can the relaxed state of the solids be braced up to advantage, while the juices are unsound, and assimilation and restriction wanting, so that exercise, stimulants, bark, steel, and astringents, will not cure them; nor will a diet of even flesh broths remove a high and virulent degree of this disease, without the assistance of green vegetables.

We may therefore add, that it is not in a sea regimen, or such as is procurable there, that we are to expect a remedy, but in such a medicine as we have been describing: and that will also strengthen and enable the organs of digestion to subdue a viscid chyle, arising from such diet as seamen are usually obliged to subsist on, and assimilate such nourishment from it as may prolong a healthy existence; *as such, we have already proposed our medicine,*

cine, therefore shall say nothing farther on that head here.

Dr. Frederick Thompson, in his Essay on the Scurvy, has very ingeniously pointed out many useful particulars on the prevention of this disease, which deserve due attention. This gentleman, when speaking of the inefficacy of *wort*, as a preventative or cure, relates, that a lieutenant in the navy, who commanded a ship last year,* in the southern whale fishery, informed him, that not only his people, but he himself, became scorbutic during the voyage, notwithstanding great care had been taken in salting the meat, and furnishing the ship with the best provisions of every species; so that even when they returned to England, their provisions of every kind were sound and good, but particularly their biscuits, which had been kept in tight casks.

They were likewise provided with a considerable quantity of good malt, which, as soon as the scurvy began to make its appearance, they used very liberally, not only by drinking its infusion, but by stewing it, and cooking it in different ways; and although they were a good deal on shore, at Port Desire, Penguin Island, &c. on the Patagonian Coast, yet as there were no fresh vegetables

* 1789.

of any kind that they could use, they could not check the progress of the disease.

We have recited this, not so much to shew a disapprobation of *wort*, as to corroborate what Dr. Lind, Dr. Clark, and even ourselves, have just now said, of the inefficacy of *regimen* alone, in the case of this disease ; for we have already shewn, that we have a much greater opinion of the plentiful use of this, and all soft dilutents, particularly those containing much fixed air, and all fermented liquors, especially those in a state of active fermentation.

That able navigator, *Captain Cook*, in his paper presented to the *Royal Society*, observes, that he is not altogether of opinion, that *wort* will be able to cure the scurvy in the advanced state at sea ; yet he is persuaded, that it is sufficient alone, with proper attention to other things, to prevent the distemper from making any great progress for a considerable time. On which, Dr. Clark very judiciously remarks, that *Captain Cook* used the wort with so many other excellent preventatives, such as fourcrout, rob of lemons and oranges, portable soup and sugar ; it is improper to place the preservation of his crew to that article. However, he adds, in *Captain Cook's* last voyage, during which he unfortunately lost his life, the crews of the *Resolution* and *Endeavour*, although they were absent above four years from England, had not a single symptom

symptom of the scurvy amongst them, notwithstanding the wort was never used; and upon opening the malt and hops at the Cape, on the homeward passage, it was discovered, that they were totally spoiled.*

Theory, hypothesis, and system, in physic, as in the other sciences, often have fallen under the stroke of experience, which, from being continually progressive, is therefore subject to perpetual change and improvement; every useful discovery adds to the common stock, however irregular or unsystematic it may be presented, that has undergone the ordeal of experience. And we are warranted with respect to our medicines, from the practice of physicians of the first eminence, who have had, and still have, their favourite nostrums, which so far from being new or uncommon in medicine, that the truly celebrated *Staal* and *Hoffman*, (both professors of physic at Halle in Germany, and distinguished chemists) Sir Hans Sloane, Sir Edward Hulse, Doctor Mead, Dr. James, and many other of our countrymen, were pleased to keep their methods of preparing and compounding them secret to themselves, while they committed their use to the public at large.

Many such favourite specifics in medicine are

* Cook's last voyage, and Dr. Clark on Long Voyages, &c. 1792.

adopted in the London and Edinburgh dispensatories, and many more in the foreign pharmacopeias. Nor are there wanting men of acknowledged abilities in the present practice of physic, who have their private *arcanas* and *panaceas*; and not a few of such efficacious medicines have been purchased, at an expence of many thousand pounds, by the kings of France, and other neighbouring kingdoms of Europe, not only for the benefit of the people they governed, but for the general good of mankind.

This leads me to one observation that materially concerns myself, that what I had principally in view, in the foregoing treatise, is not so much to recommend any particular medicine, or medicines, as to determine, in some degree, the comparative advantages of some of those which have been found most efficacious in the relief and cure of the diseases most formidable in their appearance, and fatal in their effects, to Europeans at *sea* and in *hot climates*, particularly the *scurvy*.

And to prevent disappointments resulting from the preparation and combination of *my medicines here introduced*, the product of laborious chemical processes,] and compounded with medicines unavoidably dear, whose reputation might suffer from any abuse in making them up, to the great detriment and disappointment of both practitioner and
patient,

patient, I have formed a resolution of preparing and supplying them myself, until they become in such general use, as to preclude the possibility of deception. Till then they may be had at my house, and at such places as I shall from time to time name.

DISEASES IN HOT CLIMATES.

MEDICAL DIRECTIONS FOR PRIVATE USE IN THE ABSENCE OF PHYSICIANS.

THE many situations which the various pursuits and occupations of Europeans abroad may lead them into, remote from medical advice and assistance, together with the rapid progress of these diseases, induced me not only to accommodate the language of this treatise, as near as I could, to the understanding of every reader, but at the same time to intersperse as many useful hints throughout, as would serve the generality of my readers as medical directions, in the use and application of the medicines proposed for the prevention and cure of

the diseases to which Europeans are exposed at sea in long voyages, and in hot climates.

Having this object in view, I have, as far as I have been able, endeavoured at making myself understood by every class of readers, in a manner, I hope, so satisfactory, as leaves but little occasion for the following addition, with the generality of those, who may look over this book for medical advice; apprehending that the more generally understood, the more extensively useful a book of this sort must be.

Those who are so happy as to be within reach of a surgeon, or physician, in these situations, will very naturally resort to them; and those who are not, or their friends about them, are requested to follow these plain directions, as nearly as the time, place, and circumstances will admit, without being under the smallest apprehensions, that any fatal consequences can arise from such deviations as necessity may oblige them to make, from the general plan of directions; or that any danger may ensue from mistakes, so common to those who have not hitherto acted this friendly part, in their own families, or among their neighbours.

The medicines are of qualities so safe in themselves, and innocent in their operation, they may rest assured, that, though half a paper, of which the packet contains three, may on most occasions be
sufficient

sufficient for a dose, yet one or two papers, or even the whole packet, may, and have been given for a dose, without endangering the life of the patient.

In very urgent cases, where I and others have been extremely solicitous for the life of the patient, we have given them in these increased quantities for the purpose. And in poultices and clysters, the error is oftener on the side of saving or giving them in too little a quantity, than otherwise.

They may be justly reckoned among the rare instances of useful combination in medicine, happily discovered, and confirmed by experience, which every physician should gladly receive, and candidly commit to a fair trial. Although neither he, nor the discoverer, may be able fully to account for their effects, nor satisfactorily explain their mode of operation.

See our observations on the Bark, and the comparison between them, and other patent medicines,* where we have advanced as far as experience justified our progress. And in the introduction, where their effects and operations are reduced to the standard of our own experience; a *ne plus ultra* beyond which, we wish not to make any fanciful excursions. By the time the reader gets through this book, he will discover, from the general application of those medicines to the cure of the diseases enumerated in it, that he is in no dan-

* Page 147.

ger of misapplying them, by mistaking one disease for another.

Excesses of all kinds, so pernicious in the most temperate countries of Europe, are infinitely more so in the hot climates of Africa, Asia, and America. Temperance, so beneficial and conducive to health in Europe, is the best preventative in those climates.

Wholesome food, such as is not mouldy, putrid, or rancid, and easy of digestion; and sound well fermented drink, as wine, cyder, beer, &c. are among the best preventatives, to guard from sickness, and consequently better than medicines in this intent.

Pure air is the most indispensable article of our existence, to the goodness of which we are more indebted for health, and the preservation of our lives, than to even food and drink.*

The muddy heat, and nightly dews, are unremittingly to be avoided in those climates, as the source of fatal diseases.

The exhalations of marshes, and muddy slimy shores, are equally pernicious, and always bring on fevers of the most malignant kind, agues, and scurvy.

Bad water is another cause of disease. Though ever so sweet, none is proper for culinary purposes,

* See pages xxi, xxii, xxiii, of the Introduction, and pages 216, 222, of scurvy, and sea and land breezes.

but such as is fit to wash with, that is, so soft as to lather with soap, and boil pease. Air and exercise preserve health, promote circulation, and with it, all the natural secretions and excretions, properly managed, that is, without excesses, invigorate the constitution, and dispose it less to the impression of disease. If our situations or employments oblige us to pass the day, or any part of it, in bad air, sleep, if possible, in good air at night.

If belonging to a ship, get on board, or at least at some distance from the land, in your way there, before sun-set, to avoid the dews and noxious exhalations. If you cannot get on board, get under cover; if not near an inhabited place, provide the best temporary close hut you can huddle together before the dew falls, and smok tobacco, or light a fire in it, which kept up all night, will purify the air, and protect from wild beasts, if any in the neighbourhood; and come not abroad in the morning, until the sun has dispersed the unwholesome dews and vapours.

A glass of wine and bitters, or of wine, or spirit bitters, is a good preventative in agueish, damp and marshy situations, taken before going out in the morning.

Dry clothes and cleanliness are a great preserver of health. A free ventilation of air that is not damp, carries off the foul air of sleeping rooms, and
close

close apartments; and air that is not otherwise impregnated than with dampness, is much better than the confined air slept in, which is injured both by respiration and perspiration.

Avoid sitting in a current of air, however good, when heated, or you may obstruct perspiration, the well known cause of many diseases.

The same precaution should be used in sitting near a window at night, for the same reasons.

For want of due attention to such precautions, many get cold, the foundation of innumerable diseases.

Very cold liquors suddenly drank, or much cooling fruit hastily devoured, when you are overheated, obstruct perspiration, first internally, and lastly external, which, from being turned upon the bowels, is the cause of fluxes, diarrhoea, and *cholerae morbus*.

This is not intended to prepossess any one against the great luxuriancy of tropical fruits, which, moderately used, are cooling, balsamic, and refreshing to every sense; but otherwise, not only injurious but dangerous, except to scorbutics; the desire they have, and the benefit they derive from them, scarcely admit of limitation, while that urgent desire prevails, when they cannot be said to eat, but devour them; and all antiscorbutic plants, must not be allowed at first, when recently landed
in

in an advanced state of that disease from on ship-board, in which case moderation must be enforced.

Sailors and foldiers on shore should be as little exposed, as is consistent with the service they are on, to night duty; and when unavoidable, they should be as well fortified with good clothes, meat, and drink as can be procured, and every man supplied with a dram of some kind of spirits, or a draught of wine, according to the country they are in.

Sailors and foldiers should not be wantonly exposed to the meridian heats, which are insupportable and dangerous in the extreme. The mornings and evenings are the only seasons for labour and exercise in these latitudes.

The mornings and evenings are also the best times for a full meal. Few will find much appetite for eating in the heat of the day. But light meals, and plenty of fluids will be the best regimen; in which every one may, if they please, be their own physician, and which indeed they ought; and not suffer the brute creation, unendowed with reason, to surpass them, with no other assistance than mere instinct, in things so essential to health and preservation.

Let every one who goes abroad, consider that he has to struggle with the diseases common to
those

those unhealthy climates, and arm himself with moderation and temperance. Independent of any thing I shall advise, they will have by much too many shocking mementos to remind them to be careful.

Damp fogs are the forerunners of many diseases; dry fogs are more insupportable, and excite diseases more acute in the beginning, more swift and malignant in their progress, and more fatal in their effects: trees wither, and all nature seems to droop during their continuance; respiration is injured, and a total debility ensues; and the laboured respiration and anxiety mankind are under, particularly strangers, wear a similar appearance to the languid struggles and laboured respiration of fish out of water. The furniture of houses, the boards or planks of a ship often shiver, and shrivel up before them.

The most unhealthy countries have healthy situations in them; and the most healthy have their unhealthy spots, stinking marshes, and muddy and slimy shores, vales, &c. close impenetrable woods, confined harbours unventilated.

The woods of them all, however delightful in aspect, like the beautifully variegated serpent, conceal a sting. Therefore, let Europeans take care how they venture much into them, as no sport can repay the risk, not so much of wild beasts as unhealthy stagnant air.

Thetc

These cautions apply to the men employed to wood and water on shore for the ships; a service of much danger, and easily avoided where there are inhabitants, who are always ready to supply enough at a trifling expence.

New rum and new arrack have been fatal to many sailors and soldiers at their first landing in the West and East Indies, from their being so cheaply procured and immoderately drank; excesses of this kind generally produce ardent fevers.

We should be careful how we moor our ships near slimy, swampy, sedgy shores, or in close unventilated harbours surrounded with wood, and stagnant air. It is much the best way to employ a few of the natives as a boat's crew to wood and water the ship, and fish for the supply of the ship's company, and to perform such services up unhealthy rivers as might be dangerous, or even fatal, to European sailors.

Or contract for the cutting down wood and bringing it on board with the natives, who may also bring off fresh beef, turtle, and any thing else, instead of exposing the lives of the men to night dews and chilling fogs. Fresh beef and pork in those climates, if killed in the day, it is well known, would stink before they could be dressed for use, and can only be brought on board in the night on that account; the latter is more conveniently killed on board.

It

It will be some preservation of health, to make the ship ride with a spring on her cable, that her side may be turned to the wind, whereby a free ventilation will be produced, and the foul air from the head, which is the most offensive part, will not be carried all over the decks, as it must be when the ship rides head to wind.

I am of opinion, that a few practical hints are much more beneficial here than the most rational theory; yet this much I must say, that notwithstanding I profess a science,* of all others the least influenced by theory, I am ready to allow theory to be the walk of genius, that has led to many useful discoveries, which have been matured and confirmed by experience.

Critical disquisitions, however, into the nature and causes of diseases, have often done mischief, and seldom any good. Our knowledge of the animal œconomy is hitherto so limited, that it enables us to make little or no progress in such undertakings; and analogies from chemistry, mechanics, and other sciences, however well imagined, or speciously decorated, have been found unequal to the explanation of the phenomena of living bodies.

A little reflection will teach us the utmost

* Chemistry.

modesty, with regard to our knowledge of such things; for nature seems to have innumerable ways of working, particularly in the animal functions, to which neither our senses can extend, nor perhaps could our intellects comprehend them.

Had we not, for instance, been endued with the sense of sight, nothing could have led us even to suspect the existence of such a body as light; and there may be numberless other subtile and active principles pervading the universe, relative to which we have no senses, and from the knowledge of whose nature and existence we may for ever be debarred. Even the most common operations of the body, digestion, generation, &c. when considered in their causes of action and modes of operation on the animal system, are so obscure and mysterious, as to be almost beyond the reach of rational conjecture.

How fine and subtile must be the sense of smelling in a dog, to be able to trace his master through crouds, and to a great distance; or how distinguishable and distinct must be the effluvia of one human being from another,* to aid this faithful animal in his attachment and pursuit!

When such common phenomena in the animal kingdom are beyond the little span of our arrogant comprehension; how deficient we must appear, even to ourselves, on the exercise of but a little reflection,

* The perspirable matter of the feet.

being but too obvious to need any comment. I shall leave every one to the influence of his own feelings.

Notwithstanding this, the symptoms of diseases may be considered as the language in which nature addresses us, whose meaning we are to investigate. We must not be content with merely observing them, any more than with simply remarking the phenomena of the inanimate world, but should endeavour to trace them to those laws of the œconomy on which they depend.

If, from a neglect of these useful precautions, the nocturnal chill, fog, or noxious vapours, should have made an impression on the body, a vomit of Ipecacuanha should immediately be administered, if possible, near a good fire, and a plentiful sweat excited after it, with the following bolus.

Take of the antifebrile powder, No. 1. xv grains, or to the quantity of 1 paper.

Syrup of garden poppies and conserve of orange peel, ij ʒ. Make them into a bolus. Give this, and cover the patient up warm until a sweat breaks out, which encourage by a liberal use of wine-whey, barley-water, or any kind of tea sweetened with sugar and sharpened with lemon, or lime-juice.

In default of the syrup, or conserve, give a paper of the antifebrile powder; that is, xx grains, in any jelly, or mucilage, or in the crum of new bread

bread, or extract of liquorice, and proceed as before.

If, contrary to expectation, it should vomit, or purge, encourage the former by a plentiful use of chamomile-tea; and if the latter, by weak broth, or barley-water. When it operates in this manner, it is a proof of a redundant bile, or acrid flow of humours into the stomach and intestines, which by this means will be happily evacuated.

If a vomiting without purging attends, throw up the following clister.

Take two papers of the antifebrile powder, No. 1, barley-water, or thin gruel, half a pint, brown sugar, or treacle iij ℥.

Sweet oil, one ounce; mix them well together and with a large bored glister-pipe; give it warm.

Care must be taken that the powder is well suspended in the clister, and that the pipe suffers it to pass when administered; which is the reason of recommending one larger in the bore than usual.

This method will often prevent fatal consequences. But if any symptoms of a low fever still continue, as the head-ach, a sickness at the stomach, chills, &c. a *blister* ought to be immediately applied; as these complaints, though seemingly so slight as not to confine the patient to his bed, are deceitful, and often terminate in a malignant fever.

If this fever can be brought to intermit, immediately give a quarter of a paper, that is, 5 grains of the antifebrile powder, and a quarter of an ounce of Peruvian bark, and repeat them every two or four hours, or about seven grains of the powder alone; repeated every two or four hours, according to the urgency of the symptoms; and if the air the patient is in should be foul or unwholesome, remove him into pure air, and there is no doubt of his recovery. If a sweat intervenes, manage it by adding laudanum to the powder, as follow :

Take of antifebrile powder, No. 1, x grains,

Liquid laudanum, about, j scruple.

Conserve of roses, sufficient to make them into a bolus. To be repeated as often as appears necessary, at intervals of four, six, or eight hours.

The first, second, or third dose, generally brings on an equable, sometimes a profuse sweat; the patient falls into a refreshing sleep, and the fever often goes off.

* Whey, when it can be had, is the best drink to promote sweat; made with wine, cyder, vinegar, &c. If the body is costive, give the following glister :

* See portable whey, p. 284.—And a substitute for whey, p. 244.

Take

Take of antifebrile powder, No. 1, one paper,
i. e. xx grains. Water-gruel, six ounces.

Brown-sugar, and olive oil, of each an ounce.

Glauber-salts, half an ounce.

Make them into a clifter, and give it warm.

For more particular and fuller directions, see under the head, *Fevers*, and general observations on fevers*; where the symptoms and method of cure are explained with great brevity and exactness, in a manner equally plain and familiar.

The same may be said of *agues* or intermitting fevers, of *dysenteries* or *fluxes*, of the *locked-jaw*, of the *rabies canina*, of the SCURVY, and indeed of every disease particularized in this treatise; all of which are treated on in so familiar a style, as to be accessible to every class of readers, that is, within the sphere of every comprehension: to each of which heads we beg leave to refer the reader.

If the practice of physic had attained perfection, if every disease was defined, and the best method of treating it exactly determined, there would, indeed, be no occasion for medical men; every man might then be his own physician: but as this most difficult of human arts, the *art of healing*, has not reached this pitch of human excellence, we must be content to trust this most important concern to a class of men who have made it their peculiar study, and improved it by their practice.

* Page 11, to 27.

This not being the case, all that we can propose to ourselves is to lay down what we take to be the least exceptionable mode of practice, in terms the most intelligible, or easiest to be understood, perplexed with as few technical terms as possible, which has been our aim through the whole of this work.

Dr. Blane, in his memorial to the Lords Commissioners of the Admiralty, 13th October, 1781, proposed the following salutary alterations for the use of the Navy, *viz.*

I. The establishment of a certain method and discipline, in order to secure regularity and cleanliness among the men, and to render the ships *clean* and *dry*.

II. The supply of fruit and other vegetables for the cure of the scurvy.

III. The substitution of wine† for rum.

IV. The provision of an adequate quantity of necessaries for the sick.

V. The gratuitous supply of certain medicines.

VI. The curing of certain diseases on board, instead of sending them to hospitals; and,

Lastly, The preventing of filth, crowding, and

† Had I, says the Doctor, known the salutary effects of porter and spruce beer, of which I have since been convinced, I should have proposed them as a substitute for rum.

mixture

mixture of diseases in hospitals, by proper regulations, and by establishing hospital-ships.

This benevolent physician observes, that 1518 deaths from disease, besides 350 invalids, in 12,109 men, in the course of one year, is an alarming waste of British seamen, being a number that would man three ships of the line; and that, from the conviction of his own experience, these propositions would save more than two-thirds of the seamen that would otherwise die in warm climates.

He further observes, that it is a rule in the service, that though men are sick, their ordinary allowance of salt-meat and other victuals is nevertheless served out, and is either used by the other seamen, who stand in no need of it, or is wasted; now if the purfers were instructed to provide themselves with certain species of necessaries, such as Madeira wine, sugar, rice, and dried fruit, to serve to the sick in place of rum, and the common provisions of the ship; such a regulation would be productive of the very best effects in recovering the health and preserving the lives of these men, who have the misfortune to be taken ill in a situation necessarily destitute of most of the comforts that can alleviate their sufferings,

REMARKS ON SOME OF THE DISEASES OF
NEGROES,

AND THEIR VARIOUS METHODS OF CURE.

THE *Yaws** is perhaps one of the most remarkable diseases that prevail among Negroes; it is infectious, and, like the small-pox, never attacks a person a second time; it is communicated by contact, most commonly in the same way that the venereal disease is; it is seldom caught without some connection or intimate communication; it is distinguished by numerous superficial sores of no great size, in each of which are small spherical prominences, in appearance like a raspberry; there is a general soreness and lassitude at their first irruption, but no fever; the discharge from the sores is more of a slimy mucus than matter: the length of the disease is various, extending from four or five to fifteen or twenty months.

If a negro, that has contracted the disorder, be put in circumstances favourable to general health; if he be not obliged to work, if he be allowed a good diet, and if he be kept clean by frequent washing, it

* Dr. John Hunter, on diseases in *Jamaica*.

will

will run its course, and after a time entirely disappear: We are not acquainted with any means of eradicating the poison; for though mercurials will put an entire stop to the disease, nay, remove every morbid appearance; yet it is only for a time; the disease is suspended, not subdued, and it soon recurs again*.

It is the opinion of some, that there is much danger from thus interrupting the course of the disease by mercury, and that it becomes afterwards more obstinate, and productive of new disorders, as violent pains, known under the name of the *Bone-ache*; some admit the use of mercury, provided it be not early in the disease, and say, that the disorder does not then return. The period of the disease, when it can be given with benefit, is not ascertained with any degree of precision.

Respecting this disease, there are many desiderata; we are unacquainted with the local effects of the poison, when it is first applied, and also with the interval of time between the application and the first appearance of the disease upon the skin. Both these points would be ascertained by inoculation; a practice, which has been proposed, and appears to be well deserving of a trial in this disorder.

It would be of great consequence to ascertain

* We recommend a course of the antifebrile powders, No. 2, alternated with the antiscorbutic, No. 2, internally and externally.

the earliest period at which mercury might be given to advantage. The *Bone-ache*, and other disorders, the effects, either real or supposed, of the yaws, are undescribed. These are some of the most obvious heads of enquiry on this subject. The Yaws is a disorder not peculiar to negroes; for several of the soldiers were affected with it.

Cacabay is a negro name for a disease not known among Europeans, or their descendants; as far as I could learn, it begins in whitish spots upon the skin near the ends of the extremities; these spots turn to ulcers commonly upon the fingers and toes; there is much swelling, with pain, and the joint affected drops off without any mortification; the sore afterwards heals up, and remains well even for months, but returns again, affects the next joint, which after a time drops off; and the disease attacking one joint after another, in the end reduces the miserable sufferer to a mere trunk. It continues often several years before it proves fatal.

No remedy has been found, either to cure it, or much retard its progress*. Mercurials have been tried, but with little or no advantage. It were greatly to be wished, that the symptoms of a disease so formidable, and so singular, were detailed at full length.

A disease, no less singular than either of the

* We strongly recommend a course of the antifetile powders, No. 2.

preceding, and much more frequent and destructive, and which appears to be more a disorder of the mind than the body, and shews itself by a very uncommon depravity of the appetite in eating dirt.

Dirt-eaters, as they are called, can seldom or ever be corrected of this unnatural practice, for their attachment to it is greater than even that of dram-drinkers to their pernicious liquor. They have a predilection for particular kinds of earth at first; but in the end, will eat plaister from the walls, or dust collected from the floor, when they can come at no other. They are fondest of a kind of white clay, like tobacco-pipe clay, with which they fill their mouths, and allow it to dissolve gradually; and express as much satisfaction from it as the greatest lovers of tobacco could do: this practice is common at all ages, even almost as soon as they leave the breast; the young learning it from the old.

Besides the pleasure they have in this practice after it has been habitual, they are supposed to give into it at first from other motives; such as discontent with their present situation, and a desire of death, in order to return to their own country*; for they are well aware that it will infallibly destroy them. It is supposed that a diseased state of the stomach may give rise to the depraved appetite†, but of this there is no good evidence; and, as was observed be-

* The negroes entertain a notion, that after death they return to their own country.

† See page 259 and 260.

fore, it appears to be more a disease of the mind than of the body.

Whatever the motives may be that induce them to begin the practice, it soon proves fatal, if carried to great excess. There are instances of their killing themselves in ten days, but this is uncommon; and they often drag on a miserable existence for several months, or even one or two years. The symptoms that it induces are like those of a dropsy; the appetite fails, the face becomes bloated, the extremities swell, and effusions of water take place under the skin, and in all the cavities of the body.

On examining the body after death, there are frequently found in the colon large concretions of the earthly matter, which they have swallowed, lining the cavity of the gut, and almost completely obstructing the passage. The mesenteric glands are always swelled; the blood is thin, with a few red globules, as is common in dropsies, and there are large *polypi* in the left ventricle of the heart, and the aorta. They are very strong and firm, and, pulled out, give the representation of an injection of the aorta, subclavian, and carotid arteries.

In order to ascertain whether they were formed before or after death, the body has been opened a few minutes after the patient had expired, and they have been found already strong and firm. They are no doubt formed when the motion of the heart becomes feeble and languid, just before death.

No

No means of preventing the horrid practice of *dirt-eating*, as it is called, nor any method of remedying the destructive effects of it, have hitherto been discovered; a negro labouring under the malady is considered as lost.

On many estates, half the number of the deaths, on a moderate computation, are owing to this cause; they are not to be deterred from it by stripes, promises, or threats; nor have stomach medicines, magnesia, and absorbents, or a good and full diet, ever done much good*. What could not be effected by any means just now mentioned, has been in part accomplished upon some estates, as I have been informed, by cutting off the heads from the dead bodies of those, who have died of this vicious practice. The negroes have the utmost horror and dread of their bodies being treated in this manner; and the efficacy of this expedient, which can only operate upon the mind, is a strong proof, that the disease, in its origin, is more a mental, than a corporeal affection.

Croakra, or *Crakrars*, so called by the negroes, is a cutaneous distemper, mentioned by Mr. Atkins, formerly a surgeon in the navy, to be somewhat like the itch, but not so inveterate. It appears in large blotches and blains dispersed up and down,

* See the case of a scorbutic negro; page 259 and 260. Here we recommend the alternate use of the antiscorbutic powder, No. 1 and 2, internally and externally.

and seems to raise on board slave ships from a sudden change, to an unusual and coarse, if not a salt diet, contributing to which, perhaps, may be a neglect and carelessness in drying the skin in the warmth of the sun, after it has been wet with salt-water; it is true, they do not so soon feel the effect, but repetition in the end has its share in helping to fret and chap the cuticle in this manner; at least, I imagine so, because restraining from salt food, using baths, and feeding them wholly on rice farina, and beans (the common victualling), does, together with constant rubbing in of palm-oil, generally smooth and dry it again. Where this latter practice mostly obtains (*viz.* the windward part of the coast of Guinea), there they are the least troubled with these eruptions; and where the custom is more intermitting, or salted tallow used instead, it becomes more frequent*.

The *Sleepy-disease* is also mentioned by the same author†, to be common among negroes; which gives no other previous notice, than a want of appetite

* The Navy Surgeon, John Atkins, 1734.

† This seems similar to the *Cowrap*, a disease in the East Indies, mentioned by *Bontius*. The same author remarks, that the Indian men and women are in the same practice of anointing their bodies with Borborü, the name their ointment takes from the colouring ingredient, *Turmeric*, in their language, borborü. See page 95, of this Treatise, our own remarks on the benefit derived to the negroes from anointing their bodies, &c. &c.

two or three days before: their sleeps are found, and sense of feeling very little; for pulling, drubbing, or whipping, will scarce stir up sense and power enough to move; and the moment you cease beating, the smart is forgot, and down they fall again into a state of insensibility, drivelling constantly from the mouth, as if in a deep salivation.

Young people are more subject than the old; and the judgment generally pronounced is death, the prognostick seldom failing. He attributes the cause of this deadly sleepiness in the slaves to a superabundance of phlegm, or serum extravasated on the brain. And recommends the cure to be attempted, by whatever rouses the spirits; bleeding in the jugular vein, quick purges, sternutatories, vas-scutorsies, *acu-puncture*, seton, fentanel, and sudden plunges into the sea. The latter is repeated most successfully, when the patient is young, and has not got the drivelling at the mouth and nose. This disease is not so very common in the West Indies, for very obvious reasons.

Bosman, a very intelligent author, who resided for many years in Africa, and a close observer, relates, that the negroes on the Gold-coast cure the most *violent cholics*, by giving a draught of lemon-juice impregnated with mallegatta, a species of the Cayenne-pepper. This they administer a large draught of, morning and evening, or oftener in the day, according to the urgency of the symptoms.

The

The *Guinea-worm*, is another disease of the negroes in Africa, to which it seems peculiar; by them called the *Chicoes**. For the prevention and cure, see page 78. *Exomphalos*, a disease, if it may be called so, is more peculiar to the negroes of Africa than the West Indies; in the latter, they learn to be more expert midwives, and to make a proper ligature on the *funiculus umbilicales*, or navel-string, at the birth of the infant.

† The African negroes cure both the *yaws* and the *venereal disease* by sea-bathing, and promoting perspiration by drinking plentifully of a decoction of camwood, sometimes sharpened with sour palm-wine, and at other times by lime, or lemon-juice.

A strong decoction of the same wood soon puts a stop to their *dysenteries*; to which they usually add a pod of the mallegatta. They relieve *delirium*, and obstinate *head-aches*, by a leaf of tobacco steeped in palm-wine, lime-juice, or spirits, applied to the temples; and sometimes by a sort of poultice of wild tobacco chopped up green, with green capsicum, applied to the soles of the feet. And the same composition, applied to the wrists, is their cure for a *fever*, with a decoction of herbs that promote a copious sweat. They remove a *tenesmus*, by applying the thin rind of a lime, or lemon, in the form of a pessary, thrust into the anus.

* The *Chicoes*, a negro word for a worm bred in the feet.

† Barbot and Labat.

They cure fresh *wounds* with dressings made of gums and barks; and *ulcers* by poultices of green herbs, chopped up or pounded together.

* A common cause of sores is an insect called a *Chiger*; it is of the flea kind and extremely small. It lays its eggs in the skin in an uncommon manner; for it is said to bury itself in the flesh, and become a *nidus* for its own *ova*. The part, where it has thus deposited itself, after a little time, swells, becomes red, and itches much. At this period, it is the common practice to pick out of the skin, with a fine needle, the bag formed by the body of the parent-insect, in which are contained the rudiments of the young. If this be neglected, the inflammation increases, suppuration takes place, and an ulcer is formed.

The insect harbours most commonly in dust upon the floor, or ground, and generally deposits its *ova* in the toes and feet, and many lose one or more of their toes, by ulcers arising from this cause.

The descendants of the Portuguese, who, in some parts of Africa, blend and become one people with the blacks, and are scarcely dissimilar in colour, cure this disease by applying white lead, mixed up with lime-juice, to the consistence of a

* Dr. John Hunter.

liniment,

liniment, on the part, as soon as the swelling, redness, and itching indicate the place where the *chiger* is deposited; and renew the application as it dries, until the embryo of the insect are destroyed, which is known by a cessation of the swelling, redness, and itching.

There is a large fly, that produces often a dreadful disease, by depositing its ova in the mouth or nose.* It happens frequently to *negroes*; and there are several examples of it among the common soldiers. While they are sleeping in the open air, the fly deposits its ova most commonly in the nose, but sometimes in the mouth. The pain, swelling, and inflammation about the face, after the maggots are formed and ready to break forth, are very great, and the poor sufferers are almost distracted. The number of living maggots that come away is often considerable, and they are of a large size, being nearly half an inch long.

The usual remedy in such cases is, inhaling the steam of a strong decoction of tobacco through the mouth and nose, according to the seat of the disease; it procures relief; perhaps washing the mouth and syringing the nose might be equally, or more effectual.

The African negroes dress foul ulcers with the

* Dr. John Hunter.

lint of the cocoa-nut beat fine, made into a pledget, and dipt in lime-juice and palm-wine. In the application to ulcers, the lime-juice is in the greatest proportion. When applied to bruises, torn and shattered flesh, the palm-wine is used in an over proportion to the lime-juice. In bruises and swelling from external injuries, it is their practice to bathe them with palm-oil and lime-juice, with gentle friction on the part.

Mr. Lucas, surgeon of the Conqueror, Dr. Blane, and Pierre Labot*, have treated scorbutic ulcers with lemon and lime-juice successfully, both sprinkled on a poultice, and on lint. Oatmeal, boiled up in lemon or lime-juice and water, for a poultice, sprinkled with antifebrile powder, is very efficacious.

The Hottentots cure the cholic and pains in the stomach, by cupping upon the part. They suck the part affected, having laid the patient on his back, and apply the upper part of an ox-horn, which is suffered to remain till the operator imagines the part is rendered insensible. The horn is then removed, and two or three incisions made with a knife, and the ox-horn applied, and suffered to remain until it is filled with blood and drops off.

They cleanse the stomach and intestines with the juice pressed from the leaves of the Aloe, which is both a cathartic and stomachic.

* A French author of close observation.

Dr. Nathaniel Hulme recommends to the merchants and traders to Africa, to instruct the captains and doctors in the slave trade, to furnish a sufficient quantity of orange, lemon, or lime-juice, to serve out regularly to the negroes during the voyage; as it might tend more towards the preservation of their lives, than any other method they have fallen upon.

He imagines the vegetable acid more particularly necessary for them, as they are so much accustomed to it in their native country. By this means, fevers, fluxes, and scurvies, which carry off so many of those poor creatures, might perhaps in a great measure be prevented, and thereby an immense saving be made to the merchants and trade in general; to which we may add, independent of what is due to the feelings of humanity; for although a recent act of Parliament obliges them to give the slaves more room, and consequently more air, until the utmost attention is otherwise paid to the preservation of their health, the mortality on the middle passage will always continue to be very great.

An attention to this, in any future regulation intended by the legislature, might not be unworthy of a free people; who, as a commercial nation, may palliate what they cannot wholly prevent, without invading private property.

Although

Although this is a subject that affords a wide field for the feelings of humanity, they have ample ground for the exercise of such feelings in their crowded prisons, while English liberty, or the liberty of an Englishman, is estimated by act of Parliament at a groat a day. Which serves to shew foreigners in what estimation this boasted liberty is held by the legislature of a free people.

Mr. Thomas Trotter, a surgeon of the navy, in his publication, entitled, *Observations on the Scurvy*,* relates; about the beginning of July 1783, the Liverpool Guinea-man, of which I was surgeon, came to an anchor off Cape la Hore. No ship had traded there for some time; so that in the space of a week, we purchased one hundred slaves. They were all young, stout, and apparently healthy. After being so far lucky in beginning our purchase, we proceeded to Anamaboe to complete the cargo: At coming to an anchor at Cape Coast Castle, we were informed of the slaves not only being scarce, but very dear; from the number of vessels then lying in the road.

So slow was the progress of our trade, that in February we had not bought two-thirds of our number. About this time, I perceived the slaves, first purchased, growing exceedingly fat; and on that

* 1786.

account urged to the master, the necessity of allowing them more exercise, or reducing the quantity of their diet, which had hitherto been too much; from a mistaken notion, that it would strengthen them the more for a passage to the West Indies.

Their diet consisted of beans, rice, and Indian corn, alternately boiled, to which were added, a sufficiency of Guinea-pepper, and a small portion of palm-oil and common salt. A crew*, which held from fourteen to seventeen quarts of this composition, which was of the consistence of soft paste, was given to ten of them twice in the day; they were allowed to drink water when they pleased; but, from being confined for fifteen or sixteen hours below, and permitted no exercise when upon deck, it was easy to foresee they could not remain long in a healthy state.

Such, however, was the obstinacy of the master of the vessel, that this treatment was still persisted in; the food was given them in equal quantity, and though a certain number might have been taken out of irons at a time, without endangering the safety of the ship, it was not attended to. The custom of dancing them to the sound of a drum,

* A shallow mess tub used in the slave trade.

perhaps,

perhaps, from a dislike the commander had to every species of harmony, was also denied them till too late.

In this situation, things remained with us till the beginning of March; no precaution being used to secure the health of the cargo, when a corpulent negro complained to me of a hardness in the supinator radii longus of his right arm. It had a very unusual feel, and the skin did not retain the smallest impression of the finger, or of any force I could apply. He was ordered some simple thing to rub it with; but on inspecting it next day, I found the hardness extend to all the muscles of the upper part of the fore-arm, with some contractions at the joint of the elbow, and rigidity of the tendinous aponeurosis of the biceps; the parts affected were not in the least swelled, or increased in size. And in this manner did it spread up the arm to the shoulder, over the muscles of the neck and lower jaw, producing a *trismus*; and from thence downwards, till a spastic rigidity pervaded every muscle of the body.

About this time, this hardness extended so far up the shoulder, a stupor came on; and while he retained the use of his other hand, he continued picking straws from the deck, as people do the bed-clothes, in a state of delirium. The eye now be-

came fixed, and the tongue lolled out at the side of the mouth before death. In this case, the warm bath was tried, and persisted in for some time without effect; and when endeavouring to force the mouth open, to try another remedy, I first found the gums exhibit the appearance as in the scurvy, and separating in a black mass from the teeth, many of which were loose, and the fœtor of the breath intolerable.

There was now little doubt, that the disease in question was the scurvy, though I could by no means reconcile circumstances to any thing I had ever read or seen of it; but as I had heard of it occurring among negroes, where the like causes were acting, I was the more confirmed in my opinion.

It was now time to think of either preventing it among the other slaves, or taking it at the beginning; and as the one just dead was remarkably fat, it was most probable those in the like situation would be sufferers.

I accordingly selected the most corpulent, and on examining them closely all over, found the like hardness in many of their limbs. Their gums were just beginning to shew the appearance of flesh sprouting out from them; they complained of pains and weaknesses in their extremities, and whenever they lay down, were ready to fall asleep.

Ulcers

Ulcers on any part of the body were covered with clotted blood; by the sailors called bullock's-liver, which it very much resembles. Many of them, instead of the hard spots on their limbs, had their legs swelled; and putting on pressure, a peculiar stupor was observed in some, which in the advanced state of the disease turned to delirium, and none but one with this symptom recovered.

A contraction of the joints of the ham and elbow was equally frequent. In a few, there were hæmorrhages from the nose, and a purging of blood.

These appearances were all for some time confined to the slaves that had been longest on board; and among them, those that were most corpulent, and used least exercise.

So certain was I of this, that when I saw a negro taking on fat too rapidly, I could judge when he would be seized in the like manner. Thus it advanced among them by quick degrees, till it shewed every different symptom taken notice of by authors. When it came to affect a greater number than those of the first purchase, I could perceive the natives of some different countries more liable to it than others. Of these, were what are called the *Dunco* country, of a fallow complexion, heavy dull look, inactive and gloomy turn of mind: while the Fantees, who are preferred to all other natives of Guinea, on account of their fine black colour and genteel shape, were scarcely tainted

with the disease. These, on the contrary, are a cheerful, lively people, and generally the first to raise mutiny in ships, or undertake any hazardous enterprise.

Of all the women*, only eight were affected, and that number was confined to the Duncos; very few were tainted, from being out of irons, and allowed to run about the ship. During all this, none of the sailors had the least scorbutic taint, though they generally eat a portion of the slave's victuals with their salt beef; but they had at all times plenty of fresh vegetables, which they purchased themselves from the natives; and which, I believe, were the means of correcting the bad properties of the water they used.

Our situation was now so bad, that numbers were daily taken ill, and others dropping off; while the master of the vessel, whose character was perfectly congenial to the trade, attributed every misfortune to the machinations of the doctor and the devil.

Our small stock of vegetables at departure, did not exceed a few gallons of lime-juice, ten or twelve dozen of oranges, and some baskets of guavas; being soon consumed, the state of the cargo was left miserable indeed. The decks were

* The European women get their health better in the *West Indies* and most parts of the *East Indies* than the men, probably from being more regular in their way of living, and habitually more sedentary: in Africa it is on the contrary, the men usually succeed best.

covered

covered with miserable objects, exhibiting views of distress equal to any ever recorded of this loathsome disease.

In five weeks passage to Antigua, we buried forty, and it is probable, that had we been ten days more at sea, half the cargo must have perished; there being at that time three hundred tainted in different degrees with the scurvy.

Here we took in supplies of fresh vegetables, consisting of lemons, limes, oranges, pine-apples, &c. These were distributed among them occasionally, and though they continued their usual diet, in the space of eight days that we were going down to Jamaica, there were little remains of the scurvy among them.

With respect to the method of cure, that will be found under the head Scurvy; where also may be seen the case of a negro, who in the West Indies became scorbutic from a vegetable diet, which is a very common case with negroes in these Islands*.

WITH RESPECT TO THE FEEDING OF NEGROES IN THE SUGAR COLONIES.

†It is unfortunate for the negroes of these Islands, that their masters have been so generally im-

* Page 259.

† Dr. Wilson on the Influence of Climate.

pressed

pressed with an opinion, that animal food is hurtful and productive of sores: this has originated from mistaking these sores for the true scorbutic ones.

When errors are of so long standing, it is exceedingly difficult to eradicate them; particularly in a climate where every mental exertion seems intolerable.

Domestics, in the sugar colonies, eat more animal food than the labourers, and are, in consequence, less subject to sores; wounds and scratches on them cure more easily; and they are observed to be more healthful, and live to a greater age, than those who cultivate the soil.

Did the proprietors of estates give a more ample allowance of animal food, their negroes would be more vigorous, and live longer; for there is not the smallest danger of the real scorbutic sores from an enlargement of this kind.

Fish, as a compound animal substance, is better than an equal weight of beef; it is a more animalized body, and therefore a less quantity of it will counteract the effects of crude vegetable diet.

Negroes are less subject to putrid epidemics than the white inhabitants of the sugar colonies. When putrid diseases are prevalent, either from close hot weather, in the latter end of the wet season, or from low marshy situations, the white people suffer exceedingly,

ceedingly, and numbers of them are annually carried off with the highest symptoms of putrefaction; but in such seasons, and at such places, the negroes are seldom known to suffer, or be subject to such attacks. This seems evidently the effect of their food; the continued vegetable diet acts as a constant corrector of the putrescent tendency, and prevents the same causes producing the same effects in them, which they occasion on others, whose bodies are in a more animalized state.

To similar reasons, we may attribute the scurvy being so little known among the Venetians, though they live in a damp situation, intersected with canals, from their living principally on vegetables. The island of *Teneriffe*, the *Montpelier* of the north-west shore of Africa, and the *Canary Islands* altogether, though enjoying a pure, serene, dry air, particularly the former, sufficiently distant from the main land of *Africa*, but seldom suffer from the *dry fogs*, and phlogisticated winds of the main land, from the wind rarely setting due east. Yet the inhabitants are remarkably scorbutic, particularly in the lent-season, from the principal part of their diet consisting of a very cheap, badly cured, half-rotten salt fish; which is sufficiently conspicuous to every one who has visited that island, in their way to Africa and the East Indies, &c. attracted by the cheapness and goodness of their wines,
which

which are highly beneficial on long voyages, and in all latitudes.

To which they are the more addicted, from the crude, watery, indigested, unanimalized state of their juices, from their poor low manner of living, and defective nutrition. And to whom this loathsome disease would soon be fatal, were it not counteracted by the mildness of the temperature, and salubrity of the air.

When a vegetable diet has been long used, which is not altogether the case here, the fluids are thinned, and the solids become soft and relaxed. In more southern climates, this is more remarkable, from the heat co-operating with the diet. Persons in this condition eat most greedily of all kinds of animal food.

Such food, if in a sound, or even a partially depraved state, if unmixed and unsubdued by the long action of salt, is harmless, and to those persons even healthful, though it would be productive of the worst consequences, in bodies that had been nourished by a due proportion of animal matter; as in those it would increase the alkalescent and putrid tendency beyond due bounds*.

* Every overseer in the West Indies, knows, that the negroes who cultivate the soil, and live almost entirely upon vegetables, prefer salted and tainted meats to those which are fresh and sound.

* The sceptic degeneracy of the animal fluids, and their putrid tendency in the living animal body, is much increased in hot latitudes by the impregnated state of the atmosphere; as in these countries the air is unable to free the body by the lungs from the putrescent matter continually disengaged for secretion. It therefore accumulates, in a certain degree, through the whole system, and goes off by the skin more copiously than in colder climates; to which the colour of the body may probably be attributed, and also its particular form, and that peculiar disposition of mind, which marks the natives of the tropical climates †.

In the frigid zone, the air is exceedingly favourable to the discharge by the lungs, as it is there dry and unimpregnated, but the aliment of the inhabitants is animal, and mostly fish. A diet of this kind co-operates with the want of perspiration to bring on a general strong putrescent tendency; therefore, from the opposite external causes, viz. heat and cold, we find the same effects, *for the internal heat of the human body is nearly the same in all climates.*

The inhabitants of the middle climates, or temperate zone, breathe an air, which, though not

* Dr. Willson.

† See page 184 of this Treatise.

so much dephlogisticated as that of the frigid zone, yet infinitely more so than the air of the warm latitudes; added to which, their perspiration is, generally speaking, sufficiently plentiful, and the principal part of their food is vegetables.

From those united causes, arises the less habitual putrescent tendency of the inhabitants of the middle climates, by which a much less proportion of phlogiston is discharged through the skin; and, in consequence, the colour and appearance of the body, and the faculties of the mind, of the nations of the temperate regions, are as widely different from those of the torrid and frigid zones, as the climates which produce and nourish them.

The perspiration of *Negroes* is of a strong pungent alkaline odour, which seems to arise from some peculiar property or power in the reticular covering, which gives colour to the skin.

This extraordinary phlogisticated perspiration, so remarkable in blacks, we suppose, depends on the powers of secretion in the *Rete mucosum*, by which the putrescent matter is more copiously discharged from the surface of the body: and, undoubtedly, a more free discharge of the putrescent *effluvium* by the skin, may not only liberate the constitution in a certain degree, but tend to produce that very blackness in the rete mucosum itself.

From

From these very distinguishing external marks, *Negroes* seem a peculiar variety of the human species, better fitted by nature than those of fairer complexion, to discharge by the pores of the skin, the phlogiston evolved from their bodies, and consequently are much better adapted to the warm climates.

If blackness of the skin was acquirable, like that of brown, by a long continued habitual putrescency, the inhabitants of Greenland and Nova Zembla should be black, and their hair short and curled, as they are more in this state than the *Aborigines* of hot climates; yet the colour of their skin is only dark brown, and does not affect the growth of their hair, which is usually long, strait, and black.

The negroes are remarkably less timid and more hardy than the *Indians* of the warmer climate. They are taller, better made, and infinitely more laborious, and equal to the fatigues and violent exertions mankind sometimes undergo in hot climates, from their choice, or necessity, subsistence, or the line of duty they may be engaged in, as sailors or soldiers, workmen or labourers, &c.

They have a degree of spirit and appearance, superior to the *Indians* of the torrid zone, that has sometimes manifested itself, when attempts of conquest, or settlement have been made by Europeans.

CON-

CONCLUSION OR POSTSCRIPT.

OBSERVATIONS ON FEVERS.

* AFTER many years careful attention to the symptoms and nature of fevers, as they have occurred in practice in different climates; and after reading many authors upon the subject, I am thoroughly convinced, that although many *varieties* happen, according to difference of constitution, season, situation, and climate, yet in every part of the world, the *disease* is essentially the same; or, in other words, consists only of one GENUS; and that the only *species*, that can be ascertained, are the *Intermittent*, *Remittent*, and *Continued*†.

In support of this opinion, the intelligent reader is referred to the consideration of the essential symptoms of these species of fever. The continued fever, he will find, does not differ more

* Dr. John Clark.

† See page 12 of this Treatise.

from

from the remittent, than the remittent from the intermittent type, and their frequent changes into each other, and perhaps again into their original form, prove them to be the same GENUS.

Thus the intermittent fever will in some cases assume the continued form; the remittent for several days will run on with unabated violence, and often, after the most sensible remissions, terminate again into the continued fever. Thus also, every continued fever has alterations and exacerbations, and therefore in a strict sense may be considered as a remittent.

THE CAUSES OF THE REMITTENT FEVER.

Independent of moist air after long continued heat, exhalations from marshes or damp grounds are principally; too great inanition, too great repletion from a diet of animal food, fatigue in the heat of the sun, and the dejecting passions of the mind.

The three first predisposing causes are so evident, that none can doubt their powerful influence; nor did it escape the eyes of the most common observers at Bengal, that those that had been much reduced by evacuations, particularly by the use of mercury, great eaters of animal food, and those who exhausted themselves by fatigue in the heat of the sun, were most liable to fevers, and, when attacked, had the worst chance of recovery.

But of all the predisposing causes, none seemed so powerful as the debilitating passions of the mind, such as disappointment, grief, and fear. It is owing to this circumstance, that fevers and fluxes are so very fatal to young adventurers, who annually emigrate in expectation of acquiring riches. Upon their arrival, finding all their delusive hopes suddenly dissipated, they become low spirited, take the infection, and are carried off in an instant*; while others, as little inured to the climate, and exposed to the same remote causes of disease, but who have better prospects or better spirits, either escape the sickness, or, when attacked, have it in a less malignant form.

But of all the debilitating passions, none is attended with so powerful and so sudden an influence as fear; for I have observed, that when a dangerous fever has occasioned almost an instant attack, when the person has been exposed to the remote cause of the disease.

And it is perhaps easier upon this, than upon any other principle, to account for the sudden deaths, which frequently happened to some, who attended the funeral of a deceased friend at Bengal, which generally happened to the timorous and

* This has been recently the case at *Sierra Leona*, &c. among the new Colonists sent out to settle in 1792.

humane, who suffered, while the hard hearted and callous escaped.

There is some peculiarity in the symptoms of the *Puka, Jungle, Hill, or Fen Fever of Bengal*, which induces us to enumerate some of them here; though probably, but little different from the *Yellow Fever of the West Indies, the Senegal, or African Fever*.

Pains in the bones, loins, head, and lower extremities, numbness of the hands, pains in the right clavicle or shoulder, dysentery, and other symptoms of an *affected liver*; difficulty of being purged, spontaneous vomiting of bile, and irregular secretion of it, sometimes a deficiency, at other times a redundance; a heaviness over the eyes, which are sometimes muddy, at other times suffused with yellow; offensive smell of person, stinking breath, and foetid stools; unsufferable fullness after taking in any sustenance; piles; relapse at lunar periods*.

In the *puka, jungle, and other virulent fevers*, although there is no time to be lost, yet the burning heat, pain and symptoms of inflammation, with irritability and vomiting, usually accompanying them, does not admit of irritating emetics, which may at first seem to be indicated. Under these terrific

* Dr. John Peter Wade.

appearances, let not the young practitioner be prevented from manly exertions to relieve his patient. And if the antifebrile powder, No. 2, is not at hand, let him immediately administer opium alone, or combined with calomel, half a grain of each, and from that to a grain and a half, in the form of a pill or bolus, to be repeated every half hour, as the urgency of the symptoms indicates, until the pain and irritability abate.

When the pain is abated, the operation of the opium and calomel should be assisted by clysters, fomentations, and in very urgent cases by the warm bath. This treatment will remove the pain and irritability, and mitigate the feverish paroxysm, and the bark may be thrown in. If there is any suspicion of its being rejected, or if the stomach should reject the first, or any subsequent dose, combine it with opium, in default of the antifebrile powder, No. 2, and administer purgative clysters.

In cases less urgent, the following prescriptions may be beneficially begun with* :

† Take of Epsom, or Glauber salts, j $\overline{3}$.

Emetic tartar, ij grains.

Water two quarts.

* Saline draughts in a state of effervescence relieve the vomiting.

† Glauber salts keep best in a warm country ; Epsom salts attract moisture, which renders the dose uncertain.

Two

Two ounces of this *purging mixture* to be taken every hour, until it operates downwards.

Take of Emetic tartar, ij grains.

Opium, ij. grains.

Water one pint.

Two spoons full of this *emetic mixture* to be taken every hour, until it operates.

These last two are taken from Dr. John Peter Wade.

Dr. Schotte, a German physician, informs us, that the African, or *Senegal fever*, generally happens during the rainy season; but when the rains are heavy and overflow the island, the fever assumes a malignant continued form.

The most distinguishing symptoms which attend this fever in the beginning, are nausea and sickness at the stomach, great head-ache, pain in the back, vomiting of bile, sometimes great quantities of black matter, resembling coffee-grounds, the eyes are red and shining, and seem to project from their orbits. As the disease advanced, a delirium was added, the patients complained of a burning heat at the stomach, attended with sickness and unquenchable thirst; a putrid diarrhœa came on; slight hæmorrhages made their appearance, to which were added petechiæ, vibices a few minutes before death.

Symptoms, so horrid and dreadful, seemed to preclude all possibility of recovery. Most patients died on the fourth or fifth day; a few were carried off suddenly, and some others not before the sixth or seventh day. Those who survive the seventh day, either recovered, or fell into lingering dysenteries, attended with obstructions of the liver, which sometimes terminated in suppuration, and of which death was sooner or later the consequence.

A constant and uninterrupted fever attended the disease from the beginning to the end, in all of them who died; and in some who recovered, no *apyrexia* took place before the seventh day, or later*.

The practice recommended by Dr. John Clark, is, after the bowels are unloaded by a purgative clyster, that at least one hundred drops of tincture of opium be given in three or four ounces of any emollient decoction by way of clyster, and that the patient be immediately put into a warm bath; that when he is removed into his bed, eight or ten grains of calomel be given in the form of pills with opium, if the anodyne clyster hath not totally removed the vomiting, and that the operation of these pills be hurried by the exhibition of more purgative clysters; and that, as soon as the

* Schotte on the *Synochus atrabiliosa*, which raged at Senegal in 1778.

bowels are opened, no time be lost in throwing in the bark in the most liberal manner.

The use of the bark at this time may be thought highly dangerous, and has therefore been cautiously prohibited by almost every medical writer, since the days of *Sydenham*. But experience affords sufficient proof, that this objection has no manner of foundation, and that the bark may not only be given with the greatest safety, both in the remissions and exacerbations, but even when the fever is continual.

The *Diet* of the sick ought to be of the most antiseptic kind. Ripe fruit answers very well both the intention of food and medicine. The panado, sago, and other diet on shipboard, should be acidulated, or the drink may be rendered agreeably tart by crystals of tartar, or elixir of vitriol. If the patient's strength begins to sink, he should be freely supported with wine in his drink, food, and medicines; his linen should be frequently changed, and his apartment kept as cool and clean as possible.

When the patient longs for cold water, which is commonly the case, it may be allowed him freely, as it will be found the best diluent. Nothing, indeed, in acute diseases, can be more cruel than to refuse a patient the gratification of his strong cravings. Very happy effects often follow from

indulging; and if it be very improper, there will never be so much of it taken as to do any harm.

On board of ship, porter, punch, cheese, and ham, are most frequently desired by the sick in fevers; and, however improper they may appear, I have often seen an allowance of them produce the best effects*.

As nothing can be more pernicious than violent reaching and vomiting, this dangerous symptom must not be aggravated by any method of cure that admits of the use of emetics; the vomiting overcomes; though the bark should be given with diligence, yet with caution at first, by beginning with the infusion, or decoction, and adding the powdered bark, as the stomach will bear it.

In the very low state of these fevers, succeeded by violent paroxysms, when the quantity of bark that the stomach will bear may be very little, the patient's strength must be supported by cordials: Claret and Rhenish wine and water; Teneriff and Madeira wine, by mixture and treatment necessary for the sick, are not so liable to sour and be converted to vinegar in warm climates.

Generally, during the first attack of the fever, there is a great loathing of food, and of wine, but in the remission this is not the case; and both be-

* Dr. John Clark.

come necessary, in order to support the strength of the patient.

It is of the utmost consequence, in giving both nourishment and wine, that they be repeated often, and that only a little be swallowed at a time, for the stomach is easily overloaded, and provoked to vomit.

When the sick are greatly reduced, after two or more paroxysms of fever, wine and nourishment become more essential than medicine; for in such circumstances, the bark itself often does little or no good, until the powers of life are in some degree recruited. When a stupor or *Coma* attends, treat it as directed under fevers*; this being a symptom of the fever, whatever is useful in procuring a remission, helps to remove it. In default of the antifebrile powder, No. 2, we follow the example of Dr. John Hunter†, who recommends *James's powders*, given in doses of five grains, and repeated every second and third hour, till the fever remit, or the medicine have some sensible operation. If the stomach is in an irritable state, it should be conjoined with opium.

A *stupor*, or *coma*, is a mark of a severe disease, and strongly indicates the necessity of making the

* Page 22, 34, and 145, et sequel.

† Observation on Diseases of the Army in Jamaica.

best use of the ensuing remission, by giving the bark in the most effectual manner, in order to check or moderate the next paroxysm, which otherwise might prove fatal.

INTERMITTENT FEVER.

WE have treated on this species of fever very fully under AGUES*. If any thing further was thought necessary, it would be to alternate the exhibition of the antifebrile powder, No. 1, with the antifebrile powder, No. 2, in obstinate cases, and where affections of the liver, and other visceral obstructions supervened.

And we recommend in all such cases, and in their concomitant symptoms, to treat this fever in a similar manner to that just now laid down under *remittents*, and diseases of the *liver*. And in default of our medicines, to make a liberal use of mercury and opium, particularly the former, in all climates where bad cases occur.

* See page 137 to 182.

OF THE TETANUS, OR LOCKED JAW.

* John Pennick, aged 26, on the 13th April, 1792, in jumping from the booms, sprained his ankle: an hour after the accident, he being in great agony, I was sent for to visit him†. He had constant transient convulsions of the muscles of the leg and thigh, the pain of which made him sweat profusely.

Upon examining the part sprained, nothing could be observed, except a small puffy tumour near the *tendo achilles*. When the foot was brought forward in an acute angle, the pain instantly ceased; but, upon letting it go as to relax the tendon, the tremors and pain recurred with great violence.

The foot being secured by a bandage in the position before mentioned, he continued perfectly easy for some hours, which induced him to believe, that the cramps would not return. But, upon taking off the bandage, he suffered much from his temerity. Two drams of tincture of opium were rubbed into the part affected, which, together

* Extracted from Dr. Clark.

† This was in the East Indies.

with replacing the bandage, totally removed every painful sensation.

Some hours after this, he thought himself well, and being a very active fellow, would not stay below. He therefore again removed the bandage, and returned to duty.

On the 25th of September, he was seized with spasms between his shoulders, which prevented him getting any sleep in the night. On the 26th, being in extreme torture, I was sent for, and found him in the following state :

Severe spasmodic contractions seizing the muscles, forcibly drew back the *scapulæ* almost in contact with each other. In a moment the spasms changed their situation, and striking across the ribs to the *sternum* as violently in jerks, drew the head towards the breast.

These contractions returned with severity eight or ten times in a minute, the momentary relaxation allowing some little respite from pain. In the night he observed, he could scarcely open his mouth from rigidity of the jaw, and that he had been able to void no urine for twenty-four hours.

Thirty drops of tincture of opium were immediately given, and ordered to be repeated according to the urgency of the spasms. The muscles affected were likewise embrocated with a camphorated liniment and opium. After taking three draughts,

draughts, the spasms were mitigated; but, at night he complained of a difficulty in swallowing.

On the 27th, the muscles of the neck, spine, and jaw, were more rigid, but the spasmodic twitchings were kept tolerably easy by opium. In the afternoon, as he complained of confusion of his head, the opium was given less frequently. One dram of asafœtida in solution, was prescribed every two hours, and five grains of calomel occasionally, when costive.

On the 28th and 29th, he had frequently the hiccough; the other symptoms were the same. On the 30th, after passing a good night, he seemed much better; and on the first of May, was free from every complaint, except weakness.

Having given over taking both the asafœtida and opium, on the evening of the 2d of May, his complaint returned with great violence.

His jaw was so firmly locked, as only to leave a small opening between the teeth. The *scapulæ* were drawn towards each other in convulsive jerks, and his body bent forwards at times, by a strong spasm seizing the *sternum*, abdomen, and ribs.

His left eye was dull and watery. After every severe attack of these transient spasms, he complained of faintness. Five grains of calomel were given, and opium was ordered to be continued freely.

He

He refused *asafoetida*. The jaw was locked during the whole day. He swallowed at night with difficulty, and complained at night of an uneasy sensation in the gullet, which he compared to the beating of a watch.

May 3d, he sweated much during the night, but got no rest. His jaw was less rigid, and he could open his mouth a little wider; but the stricture at the pit of the stomach was distressing.

The 4th, he was seized with violent contractions of the muscles of the neck and chin; and his jaws became again firmly fixed. Forty drops of the tincture of opium were given in a dose of camphorated julep, and repeated according to the urgency of the spasm.

But as the opium had hitherto afforded a temporary relief only, I was now determined to saturate the system with mercury; therefore, besides, the use of calomel, two drams of strong mercurial ointment were carefully rubbed into the jaw and neck.

The 5th, in the morning, he could open his jaw; but, strong spasms seizing him at mid-day, it became again strongly fixed. Two drams of the mercurial ointment were rubbed into his legs and thighs, and the opium was continued.

On the 6th, the hiccough attacked him with severity.

On

On the 7th, he could open his jaw, and was free from spasms. His mouth was tender, but no salivation was produced. Wine, for some days past was allowed freely, and he was now ordered one dram of the bark every three hours. The opiate was continued at bed-time.

From this time, he began to recover; and again returned to duty on the 10th of May. He was desired for the sake of security to continue the bark; and to bathe in a tub of sea water. But thinking himself perfectly secure, he neglected these precautions.

On the 19th of May, he was seized more violently than ever. His neck became rigid, his jaws fixed, and the convulsive contractions affected various parts of his body. The same means were again had recourse to. Opium always effected temporary relief.

All his complaints disappeared by the 25th of the month, except a slight hiccough after swallowing liquids. He afterwards used the cold bath every morning for some weeks; and was restored to his usual health.

After getting frequently wet, on the 20th of July, he was again seized with spasms in a very violent manner; which, however, were mitigated, after taking six grains and a half of opium; and in four days, disappeared under the moderate use of the same medicine.

In

In exhibiting opium in the *tetanus*, the dose must be increased so as to relieve the violence of the pains and spasms. The quantity which may be taken, without affecting the head, or producing sleep, in this disease, is astonishing.

Dr. Huck*, in a case of the locked jaw, arising from a wound, and which terminated successfully, began with one grain of opium every three hours. But by the 9th day, the dose was from necessity increased so, that the patient, at proper intervals, consumed, every twenty-four hours, one dram of opium and half an ounce of musk, rubbed down with sugar, in a pint of common julep.

This quantity, however, is trifling, in comparison to what is sometimes required in so painful a distemper.

Dr. Gloster†, of Antigua, in a case of a locked jaw, in a *negro*, aged 40, whose disease, also terminated favourably on the second day, began with giving five grains of opium every third hour, in a powder joined with camphire and nitre. The opium was gradually increased. It was afterwards united with musk and cinnabar, and lastly, given to the extent of twenty grains every third hour.

* Medical Observations, vol. iii. p. 333.

† Transactions of the American Philosophical Society, vol. i. and Clark on Long Voyages, vol. ii. p. 457.

For six days, the relief was inconsiderable; but after this, the symptoms gradually abated, and in thirteen days more, were so much diminished, that it was judged unnecessary to continue the medicine during the first seventeen days; the patient took, in all, *fifteen hundred grains of opium*, without producing the least affection of his head. During the whole time, he also had very little sleep.

With respect to counteracting the bad effects of an over dose of opium. Dr. Lind* relates a case on the authority of a physician that attended the servant of a druggist, who had become narcotic from powdering of opium. After much teasing, friction, volatile scents, or salts, with other stimulants, and even music, he remained senselessly soporific. At last, the application of vinegar on a sponge to his nose and mouth, produced the first effect of attention to what was doing. He then, sensible of its refreshing power, seemed greedily to court its continuance, till an opportunity was given of farther prosecuting his recovery, by giving acids internally, and other assisting means.

In page 341, we have remarked from Dr. John Leigh†, that acids given previous, but not after the taking of opium, counteracted its effects on the stomach.

* Lind on the Health of Seamen,

† Leigh on Opium, 1786.

The great quantity of opium taken by the Turks and Persians, without injury or soporific effects on the system, is usually attributed to habit; and nothing is generally allowed for the abatement of its effects from the quantity of coffee they constantly drink.

Coffee is an aromatic astringent berry. In pages 211 and 275, we have shewn that the astringent principle of plants are an acid. Under this persuasion, we have exhibited strong coffee in cases of stupefaction from excess in administering opium, and always with success, even beyond our expectations.

D Y S E N T E R Y.

THE extreme prevalency and fatal tendency of dysenteries in hot climates, and their frequent obstinacy in this, joined to the success attending the free exhibition of mercury in liver complaints, first in the East Indies, and afterwards in this country, probably gave rise to its application in the cure of dysentery.

The benevolent and laborious Dr. Lind, in his diseases of Europeans in hot climates, was one of the foremost to recommend this practice; accordingly

ingly we find him, in the year 1780, mention in that work, that his friend, Dr. Bogue, had informed him, that the use of mercury in obstinate dysenteries had become a practice in India so far back as the year 1757 *; and that Dr. Bogue, on his revisiting India in 1772, where he for three years superintended the Naval Hospital, that when he was last in India, mercury was more in use on the Coromandel Coast, than it had ever been before.

In bilious fluxes, when the common remedies failed, it was used with great success, either by unction or internally. Obstructions of some of the viscerae being then supposed to be the cause of the disease. Fluxes of long standing were seldom cured without it. In all bilious complaints, emetics were not so frequently given as formerly, being only intended to cleanse the stomach; but the greatest dependence was on mercurials and purges at a few days intermissions, which was supposed to be the most natural method of carrying off the bile.

* Atkins, an author of some merit, at the time, gave calomel and opium in the fever and dysentery, that raged on board the *Swallow* and *Weymouth* men of war, at the Coast of Guinea, in 1720. See his *Voyage to Guinea, Brazil, and the West Indies*, and his *Navy Surgeon*, both published in 1734.

Opium is called, by *Bontious*, his *chief hope* in the cure of dysenteries, &c. in his *East India Diseases*, Batavia, 1692.

In the year 1787, we also find mentioned by the ingenious Dr. James Lind of Windsor, in *An Essay on the Efficacy of Mercury in the Cure of Inflammatory Diseases, and the Dysentery*. Dr. John Clark, in his excellent treatise on diseases on long voyages, remarks too, although mercury had been proposed for the cure of the dysentery when he was last in India; yet it appears, that soon afterwards, its efficacy was confirmed in this disease. He observes, that, not having any correspondence in that part of the world, it did not come to his knowledge until the year 1787, when he met with it in Dr. Lind of Windsor's essay, from which he makes the following quotation.

“ One of the most useful purposes for which mercury has been given, is, that of curing dysenteries—a practice, that has been followed with great success on the Coromandel Coast. It was first made known to the different surgeons in the Carnatic by a letter sent to each of them from the late Mr. Paissy, first surgeon of the Presidency of Madras.”

Their method is as follows: As soon as the patient begins to complain of symptoms of dysentery, they give him repeatedly small doses of emetic tartar, till it operates upwards and downwards, and thoroughly cleans the stomach and
bowels;

bowels; after which they begin to give mercury combined with ipecacuanha, in the following form:

R. Argenti vivi scrupulum,
Pulv. gum. arabic. scrupulos duos,
Aq. puræ, q. s.

Tere in mortar. marmor. ad perfect. extinct. globulorum, et adde pulv. rad. ipecacuan. drachmam.
Fiat massa dividenda in pilulas lx. quarum capiat unam, tertiâ vel quartâ quaque horâ.

“ This medicine they use, till the urine, which in the beginning is high coloured, becomes pale, which they look upon as a sign of the disease being subdued; after which, a few opiates, and some small doses of rhubarb, mixed with absorbent powders, generally complete the cure.

“ During the course of this disease, they do not neglect to administer emollient and starch clysters, and on the Malabar Coast, where they had not till 1780, got into the practice of using mercury in the cure of dysenteries; if the patient had much griping, they put a blister upon the belly, which, they are of opinion, likewise prevents inflammation and mortification, the symptoms most to be apprehended in this disease.

“ It is probable, from mercury preventing inflammation, and consequently mortification, that

the above practice is so successful. Mr. Wilson, an ingenious surgeon in the service of the East India Company, told me, when at Pondicherry, that he seldom lost above two men in a year by dysenteries in the battalion of seapoys to which he was surgeon, since he became acquainted with the practice of using mercury in this complaint; whereas before that, he frequently lost in the battalion from twenty to thirty men by dysenteries in a sickly season*.”

† Dr. Balfour, who for many years resided in Bengal, was in the practice of giving calomel in the acute dysentery, after cleansing the stomach and bowels by an infusion of tamarinds with emetic tartar and manna; he administered eight grains of calomel with two of opium, at bed time, on the first day of the disorder, and continued the same for four or five nights following, or longer, if the nature of the stools should require it, and repeated the same quantity of calomel and opium at any time in the course of the disease, when judged requisite. He at the same time gave in the morning a saline purgative, or castor oil, till the disease began to yield.

Dr. Clark judiciously observes, that the best

* London Medical Journal, vol. 8. p. 153.

† See his Treatise on the putrid intestinal remitting Fevers in 1790, p. 142.

correctors of bitter saline purges, are crystals of tartar or lemon juice with brandy, which render them more agreeable to every palate. This is undoubtedly a matter of no small importance, where there is an absolute necessity to continue them daily; besides, in putrid cases, such additions must be conducive to the cure.

The food should consist of farinaceous substances, such as rice-jelly (called in India *Congee*), water-gruel, sago or salop, to which wine should be added, even freely, when necessary to support the strength of the patient. The most proper drinks, are barley-water, thin rice-gruel; and when the gripes are severe and demulcents indicated, almond-milk, or a decoction of starch, assisted with gum arabic, and rendered palatable with cinnamon-water.

When it is considered, that inflammation and ulceration so often affect the intestines, it is not surprising that the feeble means hitherto proposed have in such cases so generally proved ineffectual.

In prescribing mercury in the dysentery, the physician will be at some loss with respect to the quantity, which may be requisite to affect the system, as he is in other complaints. In some patients, twelve grains of calomel, in divided doses, will bring on slight symptoms of salivation. The majority, however, in this country, will bear from

xx. to xxx. grains; and in a few instances, it has been found necessary to persevere in its use along with purgatives, till one drachm or more has been taken. The dose of calomel, in the early stage of the dysentery should be always adapted to the violence of the distemper.

In the chronic stage of the disease, in which the patient is always considerably debilitated, a salivation ought to be carefully avoided, when from two to four grains of crude mercury extinguished in gum arabic, with one or two grains ipecacuanha, and half a grain of opium, may be sufficient for a dose.

DISEASES OF THE LIVER.

* WITH respect to the *symptoms* of a diseased LIVER. On all occasions, when the secretion of a bile is morbidly increased, diminished, or irregular, it is clear, that this viscus has not its natural action, and does not perform its proper offices. These instances alone would affect almost every disorder in that country†. But especially

* Dr. John Peter Wade, on the Disorders of Seamen and Soldiers in Bengal, 1793.

† India.

fever

fever and dysentery, most particularly in their chronic forms. The secretions of other bowels, however, are very generally deranged in a similar manner. The liver should be suspected under every derangement of any of the bowels.

Head-ache, in every kind of form, is by no means an uncommon effect. Those which are called nervous, will be always found connected with the source in question. Periodical head-aches are frequent; those which recur with obstinacy, on rising in the morning, are very suspicious.

Obstinate or periodical pains in either or both ears, are by no means of rare occurrence: frequent and severe thirst, a bitter or unpleasant taste in the mouth, foetid breath, especially in the morning, various discolouration of the countenance, sometimes yellow, at other times free from a yellow tinge; pale, but not clear; often a deadly leaden colour; sometimes of a copper tinge; on some occasions, a kind of mixture of all these in various proportions; frequent flushings of the whole face, or of particular parts only, especially of a circumscribed spot, in one or both cheeks.

Partial sweats of the head, sometimes of the forehead only; frequent giddiness, or confusion, on stooping particularly; sense of weight in the head, sometimes approaching to a degree of pain, especially on moving suddenly, or on arising on the toes and
falling

falling on the heels again with a jerk; frequent drowsiness; the mouth generally foul, and covered with viscid secretions; the fauces particularly foul, and often foetid; the gums and other parts of the mouth liable to frequent ulcerations, which are extremely painful when touched, but not otherwise.

The salivary secretions irregular; the tongue very seldom perfectly clear, but of all degrees and complexions of foulness, though generally moist; sometimes, however, very dry after sleeping, and subject to ulcerations, like the other parts of the mouth; a remarkable degree of inaptitude to continued motion in the lower jaw, particularly evinced in chewing.

The eyes sometimes yellow, generally muddy; and on some occasions perfectly free from all tinge, clear, but not vividly clear as in health, and sometimes of a slight bluish cast.

Vision, not quite so perfect as in health, especially after looking any time at one object: in some instances, a general greasiness of the face, and a glossy appearance of the eyes; flushing of the nose, and other catarrhal symptoms; sometimes a discharge of blood, without any apparent cause.

All these symptoms will be found to attend affections of the liver in various proportions, and modes of combination, on different occasions, but they are, in general more decidedly characteristic
of

of that state of the secretions of the bowels, which in Bengal, and probably all over India, is termed, *The Bile*; an appellation, which includes the morbid increase, diminution, or alteration of any of the secretions of these parts, consequently the state of the digestive powers.

All denominations of asthma, dry, humid, nervous, have often proved symptomatic of the liver, both in the strict and extended application of the term. Every alteration of the offices of the lungs, from a natural state of respiration, from a slight sense of impediment to a condition not far removed from suffocation.

A cough in all its varieties, generally dry—when moist, accompanied by excretions of every colour and consistence; pain in both or either side, or in any part of the chest; a difficulty of laying on one or both sides, and sometimes of a recumbent posture altogether; a stricture about the pharynx, or a weakness there.

When any number of the preceding symptoms prove obstinate, it will always be prudent to have the liver in view.

The functions of the stomach are generally deranged in a variety of ways, during the existence of this disorder.

These, which should seem to originate from the abdomen, are much more decisive as well as more numerous.

Dysentery

Dysentery stands foremost in all its varieties, from a slight diarrhœa to the worst symptoms of griping, strainings and discharges of blood and other matters.

The belly, often tense, hard, and painful, as well as much inflated; at other times soft though swelled, with pain on pressure and hardness round the navel. The belly in many instances considerably sunk, and often apparently of a natural form, without a single circumstance that indicates disorder there.

Pain is not uncommonly felt on the left side only; and indeed the liver, in a morbid state, extends far on that side sometimes. Excruciating pain, shooting in every direction, from the lower belly up to the right shoulder.

It is very remarkable, that in most decided affections of the liver, there is often neither pain nor uncommon sensation of any kind in the part itself. In very acute cases indeed, both pain and swelling commonly make their appearance; attack every part of the liver, consequently the pain is then pretty high up and under the ribs; at the edge of the false ribs on either side, extending sometimes from the pit of the stomach, in the course of the false ribs of the right side, to about the region of the kidney. This is very distinguishably felt by the patient, on pressing your fingers in this direction.

Piles,

Piles, hæmorrhage, prolapsus ani, and dropsy, jaundice, gout, chronic rheumatism, black vomit, affected lungs, affected spleen. The region of the bladder is too often affected. Although the *pathognomonic* symptom is the pain in the shoulder; yet, there is ample experience of its not occurring. Colliquative sweats and hectic heats indicate abscess or absorption.

TREATMENT OF DISEASES OF THE LIVER.

FOR the treatment of this prevalent disease, see what we have prescribed in the inflammation of the liver*. For the encouragement of confidence in the young practitioner, and hope in the afflicted patient, we shall subjoin a few interesting *cases*.—The first is the case of a scorbutic, which precluded the use of mercury; yet a cure was effected by Dr. Bogue of Tichfield, as follows:

† A seaman, aged about thirty-five years, was sent very ill of the scurvy, in the end of May 1759,

* Page 174, et sequel, 182.

† Dr. Lind's Diseases of Hot Climates.

to his Majesty's hospital, under my care, in the absence of the surgeon, at Negapatnam, a Dutch settlement on the Coromandel coast.

Soon after his coming on shore, he was seized with a scorbutic flux, and a few days afterwards, complained of a pain in his right side. In these circumstances, as the flux continued, and several vivid scorbutic spots had appeared on his limbs, with a contraction of both knees, I judged it improper to give mercurials ; so that a large tumour shewed itself on that side, pointing externally, with matter beginning to form.

I forwarded the suppuration with poultices, and on the 13th of July, in the cool of the evening, being about a month after his complaining of the pain of that side, I laid the tumour open about six inches, and let out near three pints of well digested matter.

I then introduced my hand into the left lobe of the liver, which I found almost intirely suppurated, and containing several honeycomb cavities, the edge of the liver adhering to the peritoneum.

He was dispirited on the thoughts of its being opened, but bore the operation better than could be expected, in that low state to which he was reduced. I cautiously filled the cavity with dry soft lint, and gave him a julep, with the tincture of bark, to take frequently.

The morning after the operation, there was a large

large discharge of good matter, and I found one sinus leading obliquely down towards the navel, and another towards the back, each about two inches in length. I laid them both open to the bottom; and these were the only openings I had occasion to make, though I found another sinus leading towards the chest.

That day, I dressed him as before; and the next day, after having fomented, I threw into the cavity, an injection of barley-water and tincture of myrrh, which I repeated three or four times, until I thought the parts sufficiently cleansed of matter. I continued to dress with lint preferably to any other application, on account of its giving no uneasiness, and its absorbing quality.

I gave him the bark in substance, as soon as his stomach would bear it. During the first fortnight, I dressed him twice a day, there being then a great discharge. The cavity afterwards filling up fast, and the quantity of matter lessening, he was dressed only once in twenty-four hours, but still continued to take the bark. In this week, the wound was not more than an inch deep, and but two inches in length, florid granulations daily forming; and towards the end of August, the parts being almost cicatrized, the patient was sent on board his ship to do duty; the admiral expecting every day to meet the French squadron,

He

He was killed on the 10th September following, in the action between the English squadron commanded by Admiral Pocock, and the French by Count D'Ache.

In hot climates, of all the *viscera* in the human body, the liver is most subject to disease. It suffers from obstruction, inflammation, and suppuration. It is a disease common all over India, frequent in Africa; but, as Dr. Blane informs us, it is not so common in the West Indies. Although he makes this remark, he concludes, from its appearance in the fleet at New York in America, in the month of October; having arrived there with thirteen ships of the line, the weather had then begun to grow cold; several cases of inflammation of the liver among the officers and men, who came from the West Indies; that it must be owing to their having resided there, disposing to an inflammation of this organ, upon changing to a colder climate. Experience justifies this remark; cases of an inflamed liver often occurring on return from these countries to England.

Repeated attacks of the remittent fever have been observed by Dr. Hunter and others, too often to produce dropsy, swellings of the liver or spleen, and frequently a complication of both these disorders; the same thing holds good of intermittents. The mercurial that he gave for these swellings, was
the

the *mercurius dulcis*. In cases of dropfies, quicksilver rubbed down with an equal quantity of honey, or conserve of hips, was given; the dose from five to ten grains of the mas*, to which half, or even a whole grain of dried squills was added, to render it diuretic, repeated every other night, as circumstances required.

It has been observed by Dr. Clark, that the remittent fever and dysentery, when allowed to run out for any length of time, frequently terminate in abscess of the liver; and hence we may see the necessity of subduing those diseases speedily, in order to prevent this dangerous consequence. This gentleman found mercury equally successful in inflammation and infraction of the liver in this country, and also in several cases of jaundice, which had proved refractory to the common modes of treatment.

The disease of the liver has the greatest tendency to impostumation. When the abscess points outwards, and the matter is discharged by incision, the patient has some chance of recovery; but when it bursts within the cavity of the abdomen, or in-

Dr. T. Morgan, in his *Mechanical Practice of Physic*, published in 1735, recommends crude mercury divided in similar manner, in doses of ten or twelve grains, in hectic and other affections of the lungs, liver, and abdominal viscera.

to that of the thorax, the case will almost always prove fatal.

Even in such deplorable determinations of abscess in the liver, the patient must not be relinquished; for when the strength and spirits are supported, nature has wonderful resources; and sometimes such dangerous cases terminate favourably. In support of this assertion, says Dr. Clark, I shall here introduce the two following cases.

The *Ship's Steward*, after recovering from the dysentery at Calcutta, was seized with an obstruction of the liver. Mercury was given in small doses, but was soon laid aside as he became hectic.

In about six weeks after, he passed purulent matter with his stools. He gradually recovered his health, and every symptom of the diseased state of the liver disappeared. As the matter was only voided in small quantity, it is probable that the abscess was situated favourably for emptying itself by the *ductus communis*.

The other is the case of a master and owner of a vessel, who had for about two years laboured under symptoms of a diseased liver; fell into a confirmed jaundice, which resisted every medicine that had been prescribed.

On the 27th of September 1788, I was first desired to attend him, said Dr. Clark. In his passage

sage from London to Sunderland, he was seized with a violent shivering fit, succeeded by pain in the region of the liver, and he became feverish. When he came ashore, Mr. Barns bled him, and prescribed some other medicines. I found him still feverish; his pulse beat 120, but was rather feeble.

His countenance and whole body were yellow; his urine very high coloured, and his stools white. He was confined to his bed, and could only lie on his back, reclining towards the right side; he had a short cough, a pain in the right shoulder, and a severe stitch in the right hypochondrium, whenever he coughed, or made a large inspiration.

Upon examining the situation of the liver, I found its edge hard, and projecting beyond the false ribs, and the least pressure gave him much uneasiness. He was ordered to be bled; a blister was applied to the part, and calomel and opium, together with the saline draught, were prescribed.

These medicines only gave temporary relief; the suppuration advanced, and he began to cough up purulent matter in great abundance, mixed with bile; in the course of twenty-four hours, sometimes exceeding three pints.

On the 25th of October, when I visited him for the third time, he still expectorated great quantities

of matter, had vomited above a pint of pure bile, and passed many bilious stools.

What he coughed up, he was sensible ascended from the seat of the liver; but it required great force to be expectorated, and often excited vomiting. His countenance and skin now began to lose the yellow tinge. But he was exceedingly reduced.

On the 13th of November, I again was desired to visit him. The hectic fever had abated; but being much emaciated, I still had little hopes of his recovery.

His liver still feeling hard, small doses of calomel, with opium, and strong mercurial ointment, which Mr. Barns had hitherto managed in a most cautious and judicious manner, were advised to be continued as an alterative. He was also supported with milk, and cooling nutriment, and every thing was done to support hopes of his recovery. His spirits, indeed, from the beginning, were wonderfully good.

During the whole suppurative stage, the tone of the bowels was kept up by infusions of calomel and bark, and rest procured at night by opiates. From the greatest state of emaciation, he gradually recovered, and still (October 1791) enjoys perfect health. His colour is good, his flesh plump; but, according to his own expression, he feels every thing sticking to his right side.

The

The marks of redundance of bile, are, a sickness at the stomach; a sense of scalding at the anus, when the stools are passing, and the yellow or green colour of the stools themselves. It is apt also to excite symptoms of fever, such as a foul tongue, a hot and dry skin, with thirst.

When collections of it are suspected, it is best to evacuate by vomiting; for it is thereby prevented from irritating the bowels, and from arriving at the inflamed parts, with perhaps, increased acrimony, acquired in passing through the whole length of the intestines*.

The proofs of this fluid being in a putrid, or acrimonious state, are taken from the changes it undergoes in colour and consistence. The natural colour of it is yellow; but it is often vomited green, and sometimes of a dark brown colour, or almost black and of a ropy consistence.

The quantity has generally been supposed to exceed what is natural; yet, we apprehend it is not an easy matter to ascertain, how much bile is secreted in an healthy person; and unless that could be done, it is difficult to say, at what point the quantity discharged exceeds that of the healthy secretion†.

* Dr. Blane.

† See page 274.

The green colour of the bile is known to depend upon the acid in the stomach; for experiments have taught us, that the most healthy bile would acquire a green colour, if mixed with an acid liquor.

That an acid is often generated in redundancy in the stomach, we have daily proofs, both in our taste of what is brought up from the stomach, and in the teeth being set on edge by it*. The green colour, therefore, is not to be imputed to any acrimony, or bad quality in the bile, but to a disease in the stomach.

The dark brown colour of the bile, and ropy consistence, are nothing more than natural changes, produced by its stagnating for some time in the gall-bladder and biliary ducts. The thinner parts of the bile are absorbed, and what remains, becomes both of a deeper colour and thicker consistence, as happens in other secretions. The great quantity of bile that is often discharged, is to be attributed to the reaching and vomiting. In sea sickness, the quantity of bile that is thrown up, is often as considerable as in the remittent fever; yet, it cannot be supposed the cause, but the effect of the sickness.

A vomit, that operates strongly, never fails to bring up a large quantity of bile, which does not appear until after repeated reachings and strainings;

* See page 183.

the usual contents of the stomach are first discharged, and after a time the bile.

The progress is the same in the remittent fever; the contents of the stomach are first thrown up, and if the vomiting continues, the bile afterwards makes its appearance. So far, therefore, is it from being the cause of the sickness and vomiting, that it does not even find its way into the stomach, till the straining has continued some time.

The large quantity thrown up may depend on two causes; the violent vomiting, which, in all cases, excites a most copious flow of bile, and the operation of digestion being at a stand, the flowing of the bile into the duodenum is not promoted; for the distention of the stomach by the food occasions a compression of the gall-bladder, which not taking place, the bile is collected in quantity, and when vomiting comes to be excited, is of course more plentifully discharged*.

The quantity of the bile, as well as its supposed bad qualities, depending upon causes that have no necessary connection with the remittent fever, and occurring wherever these causes are to be met with, even where there is no fever†; it is not allowable to impute bile, or any change it is yet known to undergo, to the production of remittent fevers. Indeed, the discharge of bile is often

* See page 274. † See page 53.

entirely owing to the use of emetics, and is always greatly increased by them*.

SCURVY, &c.

As I have advanced, with some degree of confidence, my opinion of the sanative qualities of *Land air*, and have also described the *Sea air* more impressive of impregnation with water, and more productive of *Scurvy* than the land air; and this, not merely in opposition to the opinions of some English, French, and Dutch authors; nor for the sake of *novelty*, or any other motive; but with a view to throw some light on a subject so interesting to navigators. Being more intent on establishing new facts, than in forming of theories, as stated in the Introduction.

Feeling it incumbent on me not to pass over this seeming singularity of opinion, as a mere assertion unsupported with reasoning or facts, with the self-importance of unquestionable authority; but what are cursorily interspersed in the work, and which, without the present precaution, might probably pass unnoticed.

• Dr. Hunter.

This

This treatise having for its object the three leading endemics of hot climates, *Fever, Flux*, and *Scurvy*; in which may be comprehended, all that regards the diseases in those latitudes, and that is interesting to European navigators and settlers, which comprises every description of sailors, soldiers, and travellers; it would be probably taking too wide a field for one volume, to enter farther upon the influence of climate, or the phenomena of air, weather, &c. common to *sea* and *land*, in those latitudes, than such cursory remarks, as, in my opinion, are inseparable from the subject.

To such remarks on these subjects, and such only, I meant to confine myself; but having an opinion of my own, grounded on experience and observation, I found myself unable implicitly and silently to give it up on any other terms, than a conviction that I was wrong.

And even what I have advanced different from the opinions of those respectable men, who have either thought or found it otherwise, it is with due deference to such respectable authorities; and on conviction, so far from being ashamed of it, I shall as readily come over to their way of thinking, as I have followed them in their way of acting, or mode of practice, throughout this work.

Where I have differed from them in their practice, it will be found limited to but very few particulars;

particulars; and the obvious result of having recommended some particular medicines, which I have experienced to be speedy in their operation, and efficacious in their effects.

* In the year 1748, upon the breaking up of the British Camp in Flanders, the cavalry were cantoned in the unhealthy ground about *Bois-le-Duc*, and soon after were attacked with a general sickness, occasioned by the late inundations of that part of the country.

Dr. Horne, then surgeon to Cope's Dragoons, observes†, that the troops suffered in proportion to their proximity to the marshes; and that universally, the nearer to *Bois-le-Duc*, the more violent was the distemper. The number of the sick, by very accurate observation, being found exactly to correspond with the dampness of their situation, and of the air.

To put this matter beyond all doubt, this ingenious gentleman provided himself with a good *Hygroscope*, by which he carefully measured every day the degree of moisture and dryness in the air.

Upon comparing his tables with the register he kept of the sick, he found, that the progress of the disease kept an exact pace with the humidity of the air.

On the 29th of June, they left the camp, and

* Lind's Preservation of the Health of Seamen.

† Dr. Horne Dissertat. Medica. inaug de Febre remittente.

from

from that day to the 12th of July, the air being dry, not one soldier was affected with an ailment.

On the evening of the 20th, the *Hygrometer* indicated a great degree of moisture in the air, and that very night, the epidemic sickness (viz. the remittent fever) began among the troops; three dragoons of Cope's regiment being seized with it.

During eight days afterwards, the air continued extremely moist, and the number of the sick was proportionally increased. The ten following days being dryer, the number of the infected visibly diminished. But two very moist days succeeding, the patients were again greatly increased.

In a word, the same quality of the air, which differently affected the instrument, did also every day in like manner affect the health of the men. How far this may apply to what follows, I leave to the better judgment of the reader.

The air of the atmosphere is more dense and heavy, the nearer it is to the surface of the earth and sea; and proportionally more expanded and lighter, as it recedes from or ascends above the surface of the earth and sea.

The air of the atmosphere is capable of being saturated or charged with water to a considerable degree. It is also capable of being charged or saturated with phlogiston, and this, after being saturated with water.

Water

Water is capable of being charged or saturated with the air of the atmosphere to the extent of one thirtieth part of the water employed, and with fixed and inflammable air, &c. without any sensible increase of its bulk. The elasticity of the air absorbed is not destroyed, but only diminished, or suspended. On the application of heat, it recovers its expansive force, and is disengaged from the water.

The atmosphere is continually receiving water, in the form of an invisible vapour, ascending from the earth and the ocean, by the solar heat of the sun, and evaporation of plants; and at the same time impregnating with the various exhalations arising from fermentation, putrefaction, combustion, and other phlogistic process, together with the perspiration and respiration of animals, terrestrial and aquatic*.

The particles of earthy, sulphureous, saline, vegetable and animal substances, arising from the earth and the ocean into the higher regions of the atmosphere, apparently combined into one homogeneous mass of vapours, form clouds, and ascend and descend, and are carried to and fro, according to the various changes of the atmosphere, com-

* The inhabitants of the deep perspire from their lungs, or gills—the breath of whales has been known to be the cause of instant death. See Don Ulloa's Voyage.

posing lightning, and all the meteors and phenomena of the air*.

Diffused and united with water, undergo various resolutions and combinations. When the vapour of water becomes visible, it is no longer vapour, but fog. And visible exhalations are an assemblage of very minute drops, formed by the condensation of vapour; which drops are so small, that they can scarcely overcome the resistance the air makes to their descent, and are suspended in the form of low clouds and fogs.

In which form, or in that of dews, or rain, or sleet, or snow, they return to the earth and ocean again, and become food for plants, &c. And in this perpetual round do they continue to circulate, and probably without the smallest destructibility of matter, fulfilling the wise ends of an all-disposing Providence.

With respect to the currents of air, or *winds* formed by the different density and rarity of the atmosphere, and its changes of heat and cold, and solar influence; I shall chiefly confine my observations to the *sea and land breezes*, so familiar to navigators and settlers, and as being so much more pertinent to the subject in hand†.

* See page 220 and 222, et seq.

† See page 216 to 222. et seq.

About which, much has been said by the medical writers on the diseases of hot climates, and long voyages. Much stress has been laid by these gentlemen upon the insalubrity of the *land breezes*, or the wind coming from the shore, impregnated with the unwholesome exhalations of the land, and, no doubt, with the greatest veracity and justice*.

The invigorating, sanative qualities of the *sea breeze* has been equally highly extolled, and with equal veracity and justice. Acquainted with the effects, let us for a while consider the causes; and without gainsaying these gentlemen, shew, that the land air is more healthful and bracing than that of the sea, and in a comparative view, less productive of the disease called *scurvy*.

The diurnal revolution of the atmosphere is influenced by the presence and absence of the sun; that is, such part of the earth and ocean, as forms the atmosphere or part of the globe, enlightened at one time by the solar presence, which we call day; and his absence we term night.

It is by this alternate influence, that fumes, exhalations, and vapours ascend, visible and invisible, phlogistic and dephlogistic. It is to the ascension of these, that the air of the surrounding atmosphere becomes more or less vitiated; and that, in proportion to the putrid slime and mud of

* See page 37.

some low shores; stagnate water of corrupting marshes, particularly salt marshes; the unventilated gross impregnated foul air of impenetrable thickets and woods; the crude exhalations of deep vallies; the heated steams arising from sandy flats, on which the tide or land floods of the rainy season leave or ingender a stinking, corrupt, and exceedingly offensive mud or slime among the sedge and mangrove thickets, that grow in these situations, or brought down by rains; which, in their descent, clear the atmosphere of its floating animalculi and insects, and wash down from the inland woods, the perished and corrupting vegetables, &c. &c. &c.

These are the allowed causes of a foul impregnated *land breeze*, not unfrequently charged with low hovering clouds, and offensive fogs, surcharged with the vitiating vapours arising from these foul humid situations, accompanied with heat.

With respect to the scorbutic influence experienced in the *narrow seas*, and in cruises along their neighbouring shores, these causes can apply but in a very diminished degree, from the difference between a *hot* and a *cold climate*. Here the predisposing causes are *cold* and *moisture*; and here the low clouds and fogs have also their influence, and the low, flat lands, swamps and marshes also, assisted by blowing weather.

All this is granted; taken in the gross, what does

does it all amount to?—to exactly this, *that heat and moisture, and cold and moisture, or a hot climate and a cold climate, are both productive of putrid and scorbutic diseases; and that such is the influence of climate; this is also granted.*

But has not every country its healthy and unhealthy places; whether it is situated in the torrid, the temperate, or the frigid zone? Surely, I must presume this granted; as the testimony of every intelligent, observing traveller and navigator bears evidence to the fact.

In the rainy (commonly the sickly) season in *Africa, the East and West Indies, and South America*, that is, in all places within the *tropics, or torrid zone*, do not such of the inhabitants as can afford it, usually retire to these more healthy situations, during those seasons of endemical disease?

And in all parts and places, which have not those evident signs, and manifest tokens of being unhealthy, just enumerated; do not the scorbutic and diseased sailor and passenger feel and enjoy the superiour qualities and sanative influence of the *land air*? and that they are in general restored to health, by its salutary influence, and the bountiful, often the spontaneous products of nature, to be every where found in these climates; the works of those English, French, and Dutch authors, before alluded to, will themselves bear testimony
of

of the fact; consequently, I refer them to their own writings.

Should it be uncandidly replied, that this is but a negative proof at best, of the insalubrity of the *sea*, compared to the *land air*, I must go back to the *land* and *sea breezes*, and follow up the chain of causes.

The effects of the diurnal influence of the sun's vertical heat, reflected by the surface of the *earth* and *ocean*, and particularly by the former, where the absorption of heat is less in proportion than the latter, is to rarefy the air of the atmosphere in contact with, and nearest its influence; the lower strata of which is always the most pure and dense, when unmixed with foreign exhalations.

The power of this reflection, and consequent rarefaction increases, as the day advances to its meridian heat. The rarefied air, becoming lighter, is continually detaching from the heated surface, and ascending through the heavier incumbent strata of air, which, from its gravity, is equally pressing in its descent, and which, becoming rarefied also, ascends in succession, to make way for a fresh strata of unrarefied air.

When the incumbent air is in this manner heated and rarefied, and so weakened in its spring or elasticity, as no longer to be able to continue issuing forth from the land, in the form of a *land breeze*; it is overcome, by the now denser and

more elastic air of the ocean, on which, the reflection of the sun's heat has not been so potent, and which then breaks in like a torrent upon the land, in the form of a sea breeze. This happens sooner or later in the day, in porportion to the strength of the counteracting causes, which are antagonists to each other.

The breathless inhabitants, who had been panting, like fish out of the water, in this heated, rarefied, non-elastic air, unequal to the purposes of respiration, are now immediately relieved by the denser, cooler, yet moister *air* of the *sea breeze*; which last quality is now no inconvenience, and not attended to, on the now arid land, where the restorative effects of the sea breeze make the the most sensible impression on their feelings.

The *sea breeze* usually continues to fan them, with more or less vigour, until the going down of the sun, or some time longer, in porportion to the heat of the day.

The reflected heat of the sun withdrawn, the air, which, during the day, had from its rarity and levity ascended highest into the atmosphere, in the absence of the sun's heat, begins to condense, and in proportion to the rapidity with which it condenses, which is always correspondent to the perpendicular height it is piled up, descends in the same ratio of rapidity, accelerated by the increasing cold

cold of the night, until, in its turn, it, from its density, elasticity, and coldness, overcomes the *sea breeze*, and blows from the land in all directions, which is very properly called the *land breeze*.

And which it continues to do, with greater or less force, in proportion to the heat of the preceding day, until it is overcome by the *sea breeze* setting in, as before described.

Such is the diurnal *cause* and *effect* of the solar influence in tropical latitudes, in the constant and uniform production of the *sea* and *land breezes*.

It is very evident, that the *land breeze*, issuing from cleared, healthy, or high lands, will be drier, purer, and more sanative than the *sea breeze*, from the advantages of culture, and a ventilated vegetation, and from a still more weighty cause, immediately to be insisted on*.

It is equally as certain, or evident, that the *land breeze*, issuing from a morassy, foggy, woody, unventilated, low, swampy, slimy, muddy, uncultivated soil, will be equally gross, impure, and unhealthy.

Dr. Alexander Wilson, the scientific and ingenious author of *Observations on the Influence of Climate*, to which work I am much beholden, has advanced a position, on the unimpeachable authority of *Dr. Priestley*, that seems diametrically to militate against all I have advanced on the supe-

* See the last paragraph of page 452.

riority of the *land* over the *sea air*, that has not been supported by experience.

Dr. Wilson, in the following words, remarks, that in “Dr. Lind’s treatise on the scurvy, he has given many instances, where a moist atmosphere, conjoined with a very moderate degree of cold, either at sea or land, has been productive of *scurvy*. And why seamen in long voyages are more subject to it than men at land; the same author makes clearly to arise from their being more exposed to these causes, together with a greater want of proper vegetable correctors.” On which the Doctor observes,

“From what that gentleman (Dr. Lind) hath said, it is evident that sea air does not dispose the body to a scorbutic tendency; and we are, for the following reasons, of opinion, that it rather counteracts a putrid diathesis.

“Agitation with water will depurate phlogisticated air; and the more any air is freed from its phlogiston, the greater load it will carry off from the lungs, and the longer it will support animal life*.”

After

* Dr. Priestley says, “Since, however, water in those experiments must have imbibed and retained a certain proportion of the noxious effluvia, before they could be transmitted to the external air, I do not think it probable, but that the
agitation

After this quotation, Dr. Wilson goes on remarking ; “ We are therefore led to suppose, that the sea air is more dephlogisticated than that of the land. This opinion is much confirmed by an observation made by most writers on the scurvy; which is, that this disease rages most in narrow seas, and channel cruises, and in ships stationed on coasts. Some cause must produce this difference; and it seems, no other than a very moist, impregnated state of the air, in such situations both of which are the effects of vicinity to the land.

“ From this view of the causes of scurvy, people on shore are protected from it more effectually than those at sea, by the conveniencies of life, and vegetable food. Were this wanting, and the personal exposure equally great and frequent, there is little doubt, but it would be as violent on land as at sea.”

Strong as this is, in opposition to this one position of my doctrine, I shall, before I reply, state it still stronger; and that, too, in the words of the sagacious and indefatigable philosopher, Dr. Priestley*.

agitation of the sea and large lakes may be of some use for the purification of the atmosphere; and the putrid matter contained in water may be imbibed by aquatic plants, or be deposited in some other manner.” Priestley on Air, vol. i. p. 98.

* See page 216 and 222 of the Treatise, et sequel.

Dr. Priestley says, “ *That by long continued agitation in water, he has restored air, vitiated by respiration, putrefaction, combustion, calcination, &c.*” The compiler of the Treatise on the various kinds of permanently elastic Fluids, or *Gases*, second edition, 1779, very judiciously asks, “ Was this melioration produced by the water separating the vitiated part of the air from the rest by absorption, or by the agitation effecting a kind of circulation between the external air and the vitated air, included in the jar; by which means, much of the former might be received into the vessels, while part of the latter might be absorbed by the water, and thrown out into the open air* ? ”

The event justified this reasoning: for these experiments and observations, both taken from the Doctor's first volume, are positively contradicted in the second volume of the Doctor's works on this subject. See what has been said under the head scurvy in this Treatise, on the following experiment and observation of Dr. Priestley†.

“ *Dr. Priestley has found that pure air is considerably depraved by agitation in the purest water‡.*” Notwithstanding that the Doctor has written two more volumes on the same subject, he has met

* Page 23.

† Page 222.

‡ Vol. ii. p. 96.

with nothing in the course of his experiments to contradict a position, laid down on the fullest experience; for which reason, I think it conclusive.

If we consult the Doctors Lind, Roupe, Blane, Clark, &c. &c. &c. and the numerous quotations they cite, we shall find, that they uniformly concur in opinion, that tempestuous weather at sea induces the *scurvy*, *fever*, and *flux*; the three endemics of long voyages and hot climates.

The violent agitation of the water of the ocean in stormy weather, must necessarily blend much of the water of the sea with the incumbent and equally agitated air of the atmosphere.

In proportion as the strata of air, nearest the surface of the sea, is saturated with water, it becomes specifically lighter*, and is succeeded by another, and another strata of air, until the incumbent atmosphere is so impregnated with water, that the dashing of the clouds, which are more or less electric, like the dashing of the waves together, brings a fret or shower of rain, with every squall of wind.

The insalubrity of such a humid, furcharged

* When the air of the atmosphere dissolves water, &c. its volume is increased, and the dilatation it suffers is greater in proportion, &c. See Mr. KIRWAN on Phlogiston, note by Mr. Monge, p. 193. 1789.

atmosphere, may be gathered from the observations of every one of the beforementioned authors, and from the Treatise on elastic Fluids, just mentioned.

“ Almost all exhalations, vapours, and fumes, when in considerable quantity, make the air unfit for respiration.—*The vapour of pure water threw a bird into great anxiety**.” It has been premised, that air is capable of a certain degree of saturation with moisture as well as phlogiston; and when the degree of its impregnation with humidity is considerable, the necessary discharge of moisture from the lungs is impeded in proportion; and the discharge of the vapour or moisture of the breath is as necessary to free respiration, as the discharge of the phlogistic principle.

It is only by the effects experienced in tempestuous weather at sea, in inducing the scurvy, &c. that we can estimate the extent to which the incumbent atmosphere is vitiated. Except those gentlemen who are provided with *eudiometers* and *nitrous gas*, or the materials for making it; and a proper balance and *apparatus* for determining, and weighing to what extent vitiated, and how highly charged with moisture, the air of the atmosphere may be under such circumstances.

If medical gentlemen, and others of a scientific turn, besides a barometer and thermometer, were

* See Dictionary of Chemistry, on Gases.

provided

provided with accurate eudiometers, hygrometers, and electrometers, for determining the density, heat, salubrity, and quantity of moisture, and electric or phlogistic matter in the atmosphere, in calms, tempests, and in different latitudes and longitudes, &c. they would be highly recompensed in the pleasure and information it would afford, independent of the safety and security annexed to being perfect masters of the qualities of this *pabulum vite*, in all climates inseparable from our existence.

There are many vapours, fumes, and exhalations, to which the air of the atmosphere is a vehicle, or fluid, through which they are diffused or dispersed, odorous and inodorous, as discoverable to the organ of smelling; by the agency of the air, they are waisted from place to place, lessening in their force and scent, until totally lost to the senses by solution, saturation, or decomposition, in the aerial fluid in which they floated, or united by their affinities to other matter.

These impregnations, pleasing or offensive, salutary or insalubrious, mingled or dissolved in the atmosphere, &c. I must allow, are in no great degree within the range of instrumental accuracy*;

* Except the trying the salubrity of the air by nitrous gas, and estimating the quantity of moisture in the atmosphere by the balance, or by means of vitriolic acid. One hundred cubic inches of common air weigh 31 grains, determined by Mr. KIRWAN.

but even, in the limited manner I have proposed, agreeable to the means in our power, that modern philosophy has furnished us with, appears to me a very desirable thing, and as such only have I recommended it.

Dr. Priestley and others have observed, that common air loses about one fourth of its bulk, by mixing it with nitrous air, or gas. This also happens by any process capable of phlogisticating it equal to combustion. Not only the air diminished by combustion, or in which inflammable bodies are burned, but also air diminished by respiration, or by the exhalation of phlogistic fumes of any other sort, or by putrefaction, or fermentation, are noxious to animal life, or are incapable of diminishing nitrous gas, which is the distinguishing property of respirable air.

* Nothing, say the French philosophers and chemists, who call themselves *antiphlogistians*, shews more the insufficiency of the antient theory, than the forced explanations which they are obliged to give of these experiments on water.

† The weight of the water, say they, which we obtain in burning 15 grains of inflammable gas, and 85 of vital air, amounts exactly to 100 grains.

* Chemical Nomenclature, 1788.

† Mem. Acad. des Sciences, année 1781, p. 269, & suiv, 498.

But

But in 100 grains of air, there cannot be 100 grains of water; or it must be said, that inflammable gas is water, and that vital air is water; and that consequently, these two aeriform fluids are the same thing; which is contrary to reason, because it is probable, that two bodies, which have very different properties, are not one and the same thing.

There is another experiment, which subverts all this system of explanation; the revivication of metallic calces in inflammable gas, by the means of a burning glass. If under a glass bell, or jar filled with mercury, and dipped in mercury, be introduced a pint, that is to say, two grains weight of inflammable gas, and then be introduced a metallic calx, and that the focus of a burning glass be made to fall upon it, the inflammable glass becomes totally absorbed, at the same time the metal revives, and a considerable quantity of water is deposited both on the sides of the bell or jar, and on the surface of the mercury.

It has not yet been determined exactly, what quantity of water is obtained in this operation. But it is at least proved, that it far exceeds the weight of the inflammable gas employed; therefore, it could not have been contained in this gas, for it would be absurd to suppose, that two grains of inflammable gas could contain eight or ten grains, or even more of water, in dissolution.

The

The English philosophers and chemists, or *phlogistians*, remark, in regard to the theory of the decomposition and recomposition of water; say they, the experiments which support it are brilliant and capital, without doubt, but the conclusions are deduced merely from the comparative weights of the gases, and of the water which they produce: it appears to us, say they, that too little attention is paid to that of the *matter of heat**, because its weight has not yet been rated.

Nevertheless, the enormous quantity of heat and light, which disengages during the combustion of the two airs, cannot be looked upon as nothing. Why should not the heat, that is combined in two very different states, in vital air and inflammable air, be regarded as the dissolver of the water, which their combustion has produced?

Does not what is already known, and what is every day discovered of the matter of heat, the different states of fluidity, of visible and invisible vapour, and aeriform expansion, through which it successively and continually makes water pass, lead us, and, in a manner, force us to admit this dissolution and its precipitation?

When in a summer's thunder storm, the heavens

* See the Memoirs on the Combination of the Matter of Fire with evaporable Fluids, and the Formation of elastic Fluids. Mem. Acad. des Sciences, année, 1777, p. 420 & 595.

become obscured by a mass of thickening clouds, dark and confused, a sudden discharge of thunder instantaneously breaks the combination; and when, in a second, this immense cloud bursts, melts, and covers the surface of the earth with a deluge of water: this cannot be a generation.

It is as natural to suppose, that this water, first dissolved and volatilized by the heats of summer, and thereby put into a state of expansion in the atmosphere, by the aid of the same heat, and of the different states on which this matter, so active, so subtile, so light, and so inclined to combination can enter, finds itself precipitated from these different combinations by the great *electrical* discharge which is made in the clouds, and which we perceive instantaneously to produce its effect!

We shall go no further; we shall only say, that when we permit ourselves to make these reflections, we did not pretend to oppose the new theory, rather than to defend the old; supported by the *phlogistians*, most of the English, and some of the German philosophers and chemists, and some of the French also, who, from these reflections, infer, that the water obtained from inflammable gas and vital air, may in like manner be only water, condensed and precipitated from the two gases, in which they suppose it to have been held in dissolution.

But

But we, say they, that is, the *antiphlogistians*, can easily subvert this conclusion and comparison. In the experiments on the combustion of the two gases, and the production of water, we obtain water, weight for weight. But in the example which they cite, it is very different; for, in the most violent thunder storms, there scarce ever falls an inch of water: and even if we should suppose, that more could be precipitated; if we should suppose that the atmospherical air could deprive itself of all the water it contains; yet, the quantity of water, according to the experiments of *Mr. de Saussure*, would only amount to one fiftieth part of the atmosphere's weight.

There would then remain, as the result of this great experiment, forty-nine parts out of fifty; while, after the combustion of the two elastic fluids, there remains no residuum at all, at least, when they are pure; and the weight of the water is exactly equal to that of the two gases. We, therefore, may reasonably think, that the water disengaged in a thunder storm had been maintained in a state of dissolution in the air, and that some cause or other had operated its precipitation.

Moreover, it is not merely by the means of recomposition, that we have been enabled to discover that water is a compound body, and to determine the nature of the principles which enter
into

into its combination. For the component principles of water are again found by the analysis, by the decomposition of water; so that, in this argument, we have the very utmost of chemical demonstration.

We need only present to the water any substance that has a greater affinity with the base of the inflammable gas, or with the base of the vital air, to operate the separation of the constitutive parts of the water; the water becomes decomposed, and one of its two principles, which does not engage in the new combination, unites with the *matter of heat**, and appears in the form of gas†. *The great phenomena of the nutrition and growth of animals and vegetables, of the different kinds of putrefaction, fermentation, respiration, &c. &c. &c. afford a multiplicity of examples of these decompositions.*

The new theory, we shall not deny, has its advantages over the old. It agrees better with the mutual action of the principles of different bodies: for example; this vital principle, the aliment of life and flame, which passes from the

* See the Memoirs on the Combination of the Matter of Fire with evaporable Fluids, and on the Formation of elastic Fluids. Mem. Acad. des Science, année 1777, p. 420 & 505, and see Memoir sur la Chaleur. Acad. des Sciences, année 1780, p. 355.

† Mem. Acad. des Sciences, année 1781, p. 468.

air into acids, and from the acids into a variety of combinations, from which at last it is extracted by art, and made to appear again in the form of vital air; and the new theory owes these advantages to precision, and to the exact calculation, to which the perfection of modern apparatus has reduced the method of analyzing*.

We have shewn, under acids, page 211, and under scurvy, page 275 of this treatise, that the astringent principle in vegetables is an acid; and here we see, that the vital principle, or vital part of the atmosphere, is the basis of acids. See page 196 and 297.

† When Europeans arrive in the hot latitudes, their bodies are not for some time sufficiently relaxed, to discharge their perspiration freely‡; hence arise what is called seasoning, which is usually a fever.

The great evacuation the patients suffer in the course of their cure, relaxes the vessels, and perspiration becomes thereafter free and easy; this is the change or degree of relaxation meant by seasoning, or being habituated to the heat of the climate.

* Chemical Nomenclature, 1788.

† Dr. Alexander Wilson's Observations on the Influence of Climate, published in 1790.

‡ Lind's Means of preserving the Health of Seamen, 1757.

* *Relaxation*

* *Relaxation* of body may be considered as a certain degree of putrescent tendency, which tendency seems the cause of almost all the endemic diseases of the torrid zone. We have already particularized that species of putrescency which arises from debility, and which takes place in warm climates from a crude vegetable diet.

Scorbutic habits, rather than scurvies, are also frequent from a too much animalized state of the body, and an impregnated atmosphere. Diarrhœas and dysenteries, from crude vegetable food and relaxation, are also very common.

Putrid fevers, from suppressed perspiration, and an impregnated atmosphere, are exceedingly general; by which the matter that should be discharged from the *skin* and *lungs* is retained, and these operate readily from the circumstances of climate.

Nervous diseases are also the effect of relaxation; consequently, frequent in warm countries. The disagreeable, and often highly putrid smell of the discharge from blisters in this disease proves the putrescent tendency of the humours.

† The *tetanus*, or locked jaw, from slight wounds, is most common between the tropics, and arises from an exceedingly irritable state of the nerves.

* See page 215 of this Treatise, and Alteration in the Text for that page in *Errata*, &c. et seq.

† See page 80, and Tetanus in the Postscript.

It is a fact well established, that the summer fruits and green acescent vegetables of those climates are sure remedies in the *scurvy*, provided the proper discharges from the body are free and regular; of all which, perspiration by the skin and lungs is of the greatest consequence*.

Where these are copious, the *scurvy* can never rise to a great height; and from this cause alone, the disease in the tropical latitudes seldom runs beyond what may be called a scorbutic tendency.

In these latitudes, the discharge by the lungs is, from the impregnated state of the atmosphere, more moderate than in colder climates; and did not the abundant perspiration by the *skin* make up for this effect, *scurvies* would there rage with their greatest violence.

This, indeed, is always the case, when perspiration is interrupted at *sea* by the addition of *moisture* to latent *heat*†, too frequently experienced in foggy, tempestuous weather, on long voyages in these latitudes.

For we have observed, that air is capable of a certain saturation with moisture, as well as phlogiston or heat; and when the degree of its impregnation with humidity is considerable, the necessary discharge of moisture from the lungs is im-

* See pages 215, 230, and 247, et seq. passim.

† Mr. KIRWAN.

peded in proportion, and the discharge of this vapour is as necessary to free respiration, as that of the phlogistic principle.

It is in this way, we apprehend, that air, by a load of moisture, is unfitted for free respiration*, and will even extinguish a candle†.

From these observations, we learn of what consequence perspiration is, either in preventing this disease, or promoting its cure. The acescent fruits, and other vegetables, which are to be found every where in these climates, afford the most effectual remedies; and the particular propensities of the diseased abundantly point out to them their utility.

From the frequency of these remedies, and the free perspiration in these climates, one might be led to suppose, that even a scorbutic tendency would rarely happen; but the case is far otherwise.

* Air impregnated with vapour of pure water, threw a bird into great anxiety. See Dictionary of Chemistry of Gases, p. 16.

† See Priestley's Miscellaneous Observations, vol. p. 159.

* A FATAL SCURVY IN THE EAST INDIES..

*Extract of a Letter from the Surgeon of the America:
Ship of War.*

“ *Manila in the Island of Luconia,*

“ 11th November, 1762.

“ OUR long cruise, in expectation of *Commodore Keppel's* arrival, in order to attack the French settlements at *Burbon* and *Mauritius*, proved very fatal to our *East India Squadron*, having lost on our return to *Madras*, eight or nine hundred brave fellows, by an extraordinary species of scurvy. And, as the crew of the *America* was as much, if not more afflicted with it than any other ship, so I am enabled to furnish you with a more minute detail of the fatal and diversified symptoms of this calamity.

“ The disease most commonly began with a soft swelling of the legs, which ascended to the thighs, enlarging them to an enormous size. This swelling afterwards extended itself to the belly, and *scrotum*, gradually mounted up to the breast, and

* Extracted from Dr. Lind on the Scurvy, p. 278, the fourth edit. 1772.

sometimes

Sometimes reached even to the head; so that all the cavities of the body being filled and distended with water, as well as the skin, the patients laboured under an universal dropfy, accompanied with swelled, putrified gums, a stiffness at the joints of the knees, livid stains, and scorbutic spots.

“ The patients had seldom any fever in the first stage of the disease; but when the swelling had once reached to the belly, by its hindering the proper action of the organs of respiration, a difficulty of breathing, and a smart fever came on, especially towards the evening. And when the breast became also affected, which happened soon after the swelling had reached the belly, the fever, and difficulty of breathing, were both greatly increased. At this time, the patients could by no means lie on their backs; this posture of the body exposing them to the most imminent danger of being suffocated.

“ An obstruction of the perspiration, and a difficulty of making urine, occurred almost always at the commencement of the disease, and were increased as it advanced to its height.

“ The parts of generation were in almost every patient distended with water to a vast and enormous size. I frequently, by *tapping*, emptied them of three pints or two quarts of water. This operation

ration gave immediate ease, though the relief was but of short duration; for the disease proceeding from causes (afterwards to be mentioned), which continued daily to inforce it, could not be cured, and was with difficulty palliated.

“ Some bore their affliction in the first stage with tolerable spirits, though their legs, thighs, and belly, were of an unwieldy size, of a white shining colour, and when pressed with the finger, retained for a considerable time its impression of an inch and a half in depth.

“ Their appetite was at length impaired, their thirst became violent, they complained of sharp pains in the bones of their legs, and in their joints, as in the common scurvy, as also, of an utter inability to walk; an attempt to move four or five steps occasioning a want of breath, as they expressed it, and a faintness.

“ All medicines were here unavailing. In the first stages, gentle purges and diuretics somewhat relieved their distress; and as the belly filled, it became absolutely necessary to administer *jalep*, and such like violent purges, at least twice a week, to prevent the patient being suffocated by the water, and also diuretics in various forms; and we imagined *oxymel* of *squills* and *garlic* to be of some benefit.

“ When the water had got into the breast, a
short

short cough was a common symptom. Blisters were at this time of service; as likewise pretty deep scarifications of the legs and thighs, together with *setons* put into the belly. A mortification seldom or never (which was pretty remarkable) was the consequence of any of these operations.

“ But notwithstanding our utmost efforts, the disease always gained ground. The patient, after its first attack, seldom survived seven weeks; few lived longer, many expired in a shorter time. They all died of a suffocation from water, except those from whom the water was constantly drained off, by the means beforementioned; and they, after languishing for some time, expired at length, when reduced almost to perfect skeletons, all the fluids of their body having been quite exhausted.

“ By this dreadful calamity, one-third nearly of our number was cut off in the space of nine months; for, out of four hundred and twenty men in our ship, we buried one hundred and thirty before we arrived at *Madras*, when the surf of the sea ran very high. However, upon landing our sick, most of them were soon re-established in health by the use of vegetables, lime-juice, and syrup of garlic.

“ It was an unfortunate circumstance for us, that there was little lime-juice in any of the ships of the squadron.

“ The island of *Diego Reys*, from whence we had sailed, afforded no limes, nor any vegetables, but a species of *wild purslain*, which grew in a salt marsh.

“ Every captain and surgeon, who had any lime-juice, experienced great benefit from it, in this disease. One of the captains, who had a quantity of four beer, distributed it among the sick, which was of infinite service to them.

“ The cause of this fatal calamity was principally *the sultry heat of the climate*, and bad provisions. *viz.* bread full of maggots, spoiled beef and pork, water full of vermin, and a very scanty allowance of that, and spoiled rice; which last, even in its best state, affords only a very poor and watery nourishment.”

The surgeon of the *America*, who transmitted this melancholy account from the *East Indies* to Dr. Lind, has very justly remarked, that *Rice* is by no means a wholesome, corroborating food. Bontius*, in his *Diseases of the East Indies*, recommends *Rice*, should there be a scarcity of *Wheat*; and desires, that it should not be eaten hot; for experience, says he, evinces, that hot rice is not only hurtful to the stomach, but also to the brain and nerves. That by this gross aliment, the optic

* James Bontius, Physician to the Dutch Settlements at Batavia, 1769 and 1629.

nerves are frequently so much affected, as to induce a total blindness.

The people, says our author, who sail to Amboyna, Banda, and the Molucca islands, are often troubled with a weakness of sight, and even a total blindness. Which, he says, is not perpetual, but often ceases upon change either of air or diet. The inhabitants impute it to eating of hot rice.

Hence, the people of *Java* and *Maldiva* expose their rice, after being boiled, to the cool air, or winnow it with a fan; and our sailors, says he, are prohibited from eating hot rice*.

If we inquire farther into this matter, we shall find, that the rice in the husk, called *paddy*, on which the fowl or poultry are fed on board ship, and sometimes in England, where lots of damaged paddy are bought at the India Company's sales, often grow blind; which has frequently fallen within our own observation.

We shall not pretend to determine what species of blindness this is; but the translator of Bontius, from it being sometimes a transitory blindness, and yielding to evacuations, rather thinks it a greater degree of the *Nyctalopia*, or night blindness, frequent in the torrid zone, and caused by bleeding, purging, and the root of wild valerian†.

* The Dutch East India Company's Sailors.

† Page 36 of this Treatise, *valerian* appears to be a stimulant antispasmodic.

Dr. Thompson, in his essay on the scurvy*, after quoting Hippocrates, P. Ægineta, Celsus, Galen, Festus, and Pliny, observes; It appears difficult to reconcile these very contradictory descriptions of the *Nyctalopia*; and the only way in which it can be done, is, by concluding, he says, the disease to be an intermittent (which it certainly is), and that the periods of the access were different, *viz.* in the patients from whence Hippocrates and Festus took the description of the diseases, the paroxysms commenced in the morning, and continued all day; and in those who came under the observation of P. Ægineta, Celsus, &c. the blindness came on in the evening, and continued all night.

This ingenious gentleman mentions two cases, that came within his own observation; the one a marine in the last stage of the scurvy, who complained in the evening of uncommon anxiety, difficulty of respiration, giddiness and nausea, attended with pain and heaviness over the eyes; he soon after complained of dimness of sight, and as if clouds were passing before his eyes; which gradually increased, till he became totally blind, or nearly so, for he could not distinguish candle light from

* Essay on the Scurvy, by Frederick Thompson, Surgeon, 1790.

total darkness; the pupils were considerably dilated.

Next morning, to his surprise, he found he could see tolerably well, although his sight, he found, was still rather imperfect, and continued so all the day; but in the evening, he again lost his sight; and this impaired state of vision, or rather periodical blindness, continued for a week, when he died.

The other was a quarter-master, upwards of fifty years of age, and had the scurvy to a considerable degree, but still kept his watch regularly; his sight failed him rather suddenly; one evening, when he was upon deck, after some exertions in assisting to work the ship, and getting wet, he complained of giddiness, head-ache, and oppression about the precordia:

Next morning he could see as well as usual, but in the evening became almost blind again; and this intermittent kind of complaint continued till we got to New York, where we arrived five or six days after this uncommon symptom appeared, and the man being sent on shore, recovered*.

Both these men were blistered behind the ears and betwixt the shoulders; their bowels were kept open, and they had what cordials and antiscorbutics could be procured for them; the deficiency of which on board, our author laments.

See page 329 of this Treatise.

WHEAT.

WHEAT. The decided preference, that *Bonzius* has given as above, to this superior grain over *Rice*, is justified by the experience of time immemorial. Every vegetable and animal is an entire whole in the order of beings; but this whole is an admirable assemblage of a great many mixts, very heterogeneous, and of different orders. To separate these from each other, and to discover the nature and properties of each, is the object of *Chemistry*.

Farina, or *Flour*, is a substance, which has much of the nature of gum, or mucilage, but which has evidently more taste, is more susceptible of fermentation, and of yielding nourishment.

This matter abounds in the vegetable kingdom, and is there distributed in different parts of certain vegetables. Some kinds of roots, such as those of briony potatoes, that from which cassava is extracted, salep, and several others, contain a great deal of white fecula, which has the properties of farina.

But the largest quantity of this matter, so valuable, on account of its supplying the principal nourishment to mankind, and to many other animals, resides in grains, which are therefore called farinaceous; such as those of wheat, rye, barley, oats, rice, and other similar plants.

It is deposited in these for the same purpose, as mucilage and sweet oil are in the seeds called *Emul-*
sive;

five; that is, to serve for the nourishment and growth of the *germ* of the plant, in the first period of its expanding. It is the nourishment ready prepared; and as it may be said, already digested by the parent plant for the support of the beings which it produces. It is the aliment of their earliest age, while they are yet too weak to extract directly from the earth and other elements, the materials which must afterwards transform by their organic action into their own substance, in the same manner as the emulsive milky matter of many other seeds. Among animals, that of the yolk of an egg, and lastly, the milk of animals, are evidently destined to procure to the *embryos*, or young of the several beings, a nourishment already half assimilated, the digestion of which is easy, and proportionable to the weakness of their organs*.

Mr. *Baccari* in Italy; Mr. *Kessel Meyer*, in Germany; Mr. *Rouelle*, in France, and Messrs. *D'Arce*, *Beaumé*, *Malouin* and *Parmentier*, late Mr. ———, have been all struck with the great quantity of gluten *vegeto-animal* matter of *wheat*, which the other farinaceous grain have but in a very small degree.

† All the world agrees, that it is to the animal

* See page 284.

† Our starch makers have long been in the habit of feeding and fattening hogs with this animal gluten of wheat.

nature of this gluten, ascertained by these gentlemen, and other chemists, that wheat-flour derives its superiority. The quantity of it varies much in different wheat, and is in general a criterion of its goodness, and is from a fifth to a third, or even more. But its qualities are always the same.

The first and most abundant part is pure starch, a white fecula insoluble in cold, and soluble in hot water. Of the nature of a mucous substance, which, when dissolved, forms a watery glue, or paste. This matter is susceptible of fermentation, especially of the acid and mouldy kind. Yields, when analyzed, an acid spirit, and a heavy empyreumatic oil.

The second substance is the *gluten*, a singular matter; its colour is more grey, is very tenacious and elastic, capable of being extended to ten times its dimensions by force, which, when withdrawn, it returns to its usual size and figure. Although indissoluble in cold and hot water, and capable of adhering strongly, as resins do to all bodies that are not wet, which fits for cementing glass or porcelain, has not however any of the other properties of resins, or concrete oily substances, seems to approach to the nature of gums, in the resistance it makes to the action of spirit of wine, oil, saponaceous menstrua and æther, as well as by the property it has to form a glue.

But

But it is not a gum, as appears from its insolubility in water, and from the principles obtained from it by distillation, which are different from those which gum yields. As those principles are exactly the same as those obtained by analyzing animal substances*; and as the effects of the fermentation, of which it is susceptible, are analogous to those which are produced by animal matters; it is to this kind of compounds, that we ought to refer this substance. Among all animal matter, cheese is that to which this glutinous substance is most similar†.

Lastly, the third substance, which is observed in flour, is mild, perfectly soluble in cold water, of the nature of saccharine, extractive, mucous matters, and susceptible of the spirituous fermentation. This *mucoso-saccharine* substance is found but in a small quantity in wheat flour, and exists in much larger in barley, rye, and other grain.

There can be no doubt but that it is from the union and just proportion of these three constituent parts of wheat flour, that its beforementioned superiority over all others consists, for making bread that is light, agreeable, and salutary.

* With vitriolic acid, the gluten of wheat flour formed a vitriolic, and with marine acid, a true sal ammoniac.

† Mr. ——— has made a substance indistinguishable from cheese with it.

Although

Although the amilious or starchy part, as found by Mr. ———, yields but an inferior bread, and the white starch not so good a bread as the grey; yet it is an important thing to know, as starch has a considerable advantage over flour, in being much more incorruptible; and particularly, as spoiled or damaged wheat makes good starch, and fit for this purpose*.

When wheat flour is kneaded into dough, before it is baked, it is allowed to undergo a certain degree of *spirituoso-acid* fermentation, from the addition of yeast or leaven†; then the paste swells by the disengagement of the volatile gas, which arises from the fermentation excited in the mas; the viscosity of which is diminished by the intestine motion and consequent division of the particles. When the paste arrives at this state, it is baked, and becomes a good and wholesome bread, easy of digestion, and assimilable with the fluids of the animal system, and at the same time counteracts the bad effects of a salt diet.

* Starch may have this animal gluten in a great degree, so as to make a bread similar to wheat flour. All animal glutens, and gelatinous matter, which may be brought to sea in a portable or concrete state, are applicable to this purpose, when dissolved in the water of the dough; as experienced by Beaume and Rouel.

† Palm wine is an excellent ferment, without bitterness.

These

These properties, no doubt, render well fermented bread of wheat flour preferable to all others as wholesome aliment, and an almost indispensable article of food to incipients and convalescents of the scorbutic diathesis*.

Starch, from its greater degree of incorruptibility, has its advantages in very long voyages. It is observable of it, that it does not make so binding and tough a dough as the wheat flour in substance; so much so, as to be with difficulty kneaded into loaves, from its proneness to split and incoherence, notwithstanding that yeast was added in considerable quantity. Otherwise, it is not materially different in taste from ordinary bread, except in being more bitter, from the superabundance of yeast employed in its fermentation.

In quality, it is neither so light nor spongy as common bread; on the contrary, it is more hard, dry, and difficult of mastication, in which it approaches nearer to the common biscuit. These are faults naturally to be expected from the subtraction of so essential a part as the animal gluten of the flour.

Wheat is undeniably foremost on the list of

* Those qualities are derived from the native acid and volatile alkali of the vegetables. See p. 346, 250 to 260, &c. Present acid to these vegetables, and a neutral salt is obtained of the kind constantly formed by such an acid and an alkali.

those grains coming under the denomination of bread corn. The potatoes of the temperate, and the *Satyrium* of the torrid zone, seem the most preferable for food among the roots of plants. Those of the yam and sweet potatoe of the warmer climates bear a strong similitude to our own potatoe. The *satyrium* is a root of the Orchis kind, variously prepared in those countries* under different names, according to the language of the preparers. The *salep*, &c. is one of them. The *sago* is prepared from the pith or medullary part of a tree growing spontaneously in those latitudes. A little time will develop the qualities of the *bread fruit trees*, one of the products of the newly discovered islands by the late Capt. Cook; which Capt. Blyth has been transporting in a state of vegetation to our West India colonies.

Messrs. Beaume and Rouel made an edible cheese with the animal gluten of wheat flour†. The caseous parts of the *portable whey* (recommended page 284) combined with starch, is a good succedaneum for wheat flour in making bread with starch. The butyraceous part of the milk swims

* The *farina* or *manioc* of the Portuguese; the *cassava* of the Spaniards, in their South American colonies; and the *tapioca* of Africa and the East Indies, are all the product of the same plant.

† Additions to Macquer's Chemistry.

at the top, and the caseous remains undissolved in the extemporaneous whey made of the portable whey, and water, from which the one can be skimmed, and the other strained off.

As flour may be pressed or rammed into casks that are water tight, so as to take not above a quarter of the room that biscuit does; and that the new cabooses, or fire places, are so constructed, that the same fire, that heats the copper and dresses the men's victuals, are provided with ovens, in which their bread can be commodiously baked without any additional expence of fuel; but, that it would be most adviseable to supply all ships with flour, and yeast in a concrete or dry state, for making their own bread at sea. This is very much the practice with the French and other nations. The flour, thus impacted together in close casks, impervious to air and water, keeps longer than biscuit in a state of preservation.

Various substances have been recommended for the preserving water sweet at sea; among the best is lime, or the *vitriolic acid*. The former does best as a restorative, the latter as a preservative. One of the best contrivances is Osbridge's machine for sweetening water at sea; it consists of a tin half cylinder, containing a number of cullenders of the same metal, into the uppermost of which the water is pumped out of the cask, and in being

divided and exposed to the air in its descent, is sweetened. This water, afterwards passed through a filtering stone, is very good for every purpose. Water may be rendered completely sweet by fermentation, by the fixed air extricated in that process. This is easily effected by a small addition of any saccharine substance and a little yeast*.

Porter, as a preventative of the scurvy, is mentioned by Drs. Blane, Clark, Thompson, &c. It becomes an object of consideration in long voyages.

Where the necessary provisions and stores in ships of war, and the freight and tonnage in East India, Guinea ships, South Whalers, &c. might be too much intrenched upon; *the extract of wort*, put up with a due admixture of *the extract of hops*, furnishes a good substitute, and obviates those objections.

Thus *portable porter* may be advantageously supplied to all descriptions of shipping destined to be long at sea, in a commodious form, occupying so small a space, as to be unobjectionable on that account: these extracts of malt and hops, when prepared with a larger portion of water, will be found to make as good table beer as can be wished for,

* See p. 344. Wood shavings, saw-dust, chips, turpentine, spruce, &c. will, in an inferior degree, bring on a fermentation, with agitation, and a little yeast, beer, or palm-wine.

and

and to most palates much better than porter and water mixed are known to make.

However chimerical it may seem, I flatter myself, I am warranted (from what has fallen within my own observation) to say, that in the pursuit of means to arrive at a method of occasionally correcting and purifying the corrupt atmosphere of a ship in bad weather, and in the sick births, when atmospherical ventilation could not be resorted to, in bad weather; that some lucid flashes have issued from this obscure, dark pursuit, that, in my opinion, throw a great light on the probable means of even being able to make *portable water*; water in a concrete state.

Thus much I have ventured to say, that notwithstanding, however chimerical some people may think the idea, I shall go still farther; and as I value the success of so desirable an object much more than the ambition of being the first person that shall accomplish it, I shall hint at the probable means; that by alluding to what is already known to some chemists and philosophers, men of genius may engage themselves in similar pursuits.

It has been hinted at, in the introduction to this work, that although my medicines were not calculated to sweeten and correct bad air, and render it fit for respiration, &c. page xxiii; that it was

by no means an uncompassible thing to procure a pure atmosphere on board a ship, &c.

We know that water is an evaporable substance ; as it is by combining the processes of evaporation and condensation, that we are enabled to distil it. But at the same time, we know it is not reducible to an extract, like *portable soup*, *milk*, or *wort*. But, happily, we know it is procurable from solid, and from aerial bodies. We have seen, in the *introduction*, some of the means enumerated, by which vital air, the most respirable of all airs, is producible ; and we are there told of some airs, which, inflamed together, produce water ; after which, can we withhold our assent to the idea of it being amply procured by these or other means ?

The fluid, evaporated with so much pain and industry in the formation of all these extracts, portable soups, whey, malt, &c. must be replaced, before we can make use of them. Therefore, without plenty of water, all those extracts would be of no use. Hence, if water could be shipped in a solid or concrete form also, or, what is the same thing, the materials for producing it, the horrors that the want of this indispensable fluid excites might be obviated, in long voyages ; and all those preservative and restorative extracts, so healthy, useful, and agreeable, be in no danger at any time of being rendered useless, for want of fresh water on board ships at sea.

Great

Great as the progress is that has been made in the discovery of the component parts of the air of the atmosphere, we are much better acquainted with the analysis of the water of the ocean. Yet *distilling* seems the only process employed to obtain fresh water from it; and that, by the application of a pending tube, or pipe, of copper, or tin, to the cover of the kettle, that the men's beef and pork are boiled in; and even this has been found good enough to boil their pease in.

Water has been procured from the sea, tolerably sweet, by *filtration*. In a sandy soil, near the sea shore, large casks have been bored full of holes, and sunk in the sand, through which the sea water has filtered perfectly sweet and wholesome, and drawn up from out of the cask as out of a well. This expedient has been often resorted to by mariners, in warm climates; in cold countries, fresh water is obtainable in any quantity, from the spontaneous freezing of sea water, by the cold air of the atmosphere.

Water can be obtained in considerable quantity by the *condensation* of air, a proper syringe and condenser, capable of throwing in or condensing three or four or more atmospheres in the compass or space of one, and the immediate application of cold, obtainable by applying wet cloaths to the outer surface of the condenser, exposed to a current of

air, to promote cold by the quick evaporation of the water of the wet cloaths; cloaths wet in sea water will do. The condenser should be provided with two cocks: one to let off the condensed air, exhausted of its superfluous moisture; the other, to draw off the water, besides the syringe-tube for charging it with fresh air. It is almost needless to observe, that moist weather is most favourable to this manner of obtaining water by condensation of the air of the atmosphere, and subsequent cold, procured by evaporation, or the application of wet cloaths, as before mentioned.

Water is obtainable from atmospheric air by *attraction*; that is, by presenting substances capable of attracting moisture or water in large surfaces, and in proper vessels, to the air.

Water is absorbed from the atmosphere in considerable quantities, by the human system. Dr. Blane has somewhere recommended to seamen obliged to leave their ship, and take to their boat for the preservation of their lives, in want of water, to apply sea water to the surface of their bodies; in some degree, to compensate, by absorption, for the deficiency or want of this indispensable article of life to drink*.

* The doctor is of opinion, the saline part will not be absorbed, and probably he is right; it is well known that it enters the absorbents of some plants.

* Dr.

* Dr. Home found that the absorption of water by patients, in bad and in incurable diabetes, was considerable ; and that it frequently overbalanced perspiration†. The intelligent reader, who may or may not derive information from the foregoing hints, will form his conclusions accordingly. We prefer giving the opinions of others, on established facts, to reasoning on them, in a work like this. With respect to what is advanced here, on our own authority, we shall not fail to obtain credit with the generality of our readers, in assuring them, our notions of water, in a concrete state, are too crude and undigested, to think of laying them before the publick, until the further experiments which we are making establish the fact.

Flummery, made from oatmeal steeped in water, and shifted every twelve hours or oftener, according to the existing heat of the weather, until properly soured, is an agreeable antiscorbutic substitute for burgoo at sea ; against which we know of no objection, but the waste of water ; and this may be obviated by letting the oatmeal stand with the first or second water, and boiling them together.

It is a well known fact, that our want of success in the East Indies was intirely owing to the Scurvy on board the fleet under the command of Sir Edward Hughes. To such excess did this

* See what we have said on the quantity of perspiration, p. 247.

† Clinical experiments, under the article, Diabetes.

debilitating disease rage, that they frequently suffered for want of a sufficient number of men in the actions they had with the French ; particularly in the last, where so many were ill of the scurvy, that there was scarcely a sufficient number to man the guns in any ship in the fleet.

The journals of the Spanish navigators abound with shocking narratives of the ravages of this hideous disease in those seas ; particularly in their passage from China to New Spain.

To similar facts, the voyages of the Dutch bear evidence ; these people, who at one time were the principal carriers of Europe, and have long had large possessions and great intercourse with those parts, are but too well acquainted with the virulent effects of this loathsome disease.

The journals, and authentick histories of voyages of these, and all the maritime nations in those seas, inform us, that heat and moisture, the parents of corruption, and dissolvents of the animal fluids, which constantly induce fevers and dysenteries, are, remotely and proximately, the predisposing causes of Scurvy, and an indisputable testimony of the fact, that this disease is not the endemic of northern latitudes, or cold countries exclusively.

PRICKLY HEAT.

THIS is a cutaneous eruption, usually appearing as we approach the equator. Bontius calls it the endemic of Amboyna, and the Molucca Islands, where it is generally much more virulent than on board ships.

He attributes it to the peculiar nature of the soil, and exhalations of the sea, joined to a viscid gross diet of sago and fish.

It consists in a breaking out in various parts of the body, &c. of pimples, and red spots, exciting a prickly and intolerable itching, interspersed with blotches and eminences, sometimes not unlike those weals raised by the sting of nettles.

In very virulent cases, increased by scratching, they sometimes ulcerate, and discharge a viscid acrid matter, that corrodes the surface to some depth, forming ulcers with inverted lips.

This is most frequent in bad habits of body. The milder sort is little other than a small red rash, and if unaccompanied with feverish symptoms, is accounted salutary; and although attended with a sensation of heat and pricking, becomes a bearable disorder in habits not very irritable.

Some

Some are incommoded with it, only when much exposed to the heat of the sun, or on making great muscular exertions; others are troubled with it all the year round. In those, who have this complaint in a moderate degree, it scarcely appears to the eye to be raised above the surface of the skin, though it gives a slight roughness to the feel.

It probably depends on a twofold cause; the irritating action of the heat upon the skin, and the concentrated state of the salts of the perspirable matter. The rays of the sun in hot climates are capable of raising blisters on the skin; the perspiration always being profuse, the thinner parts soon fly off, and the remainder becomes more loaded with animal salts, and is of course more irritating.

The *prickly heat*, when severe, is mitigated by a cool and spare diet, and gentle laxatives. When not, no other inconvenience arises from it, than the prickly itching; and in a short time, either disappears, or ceases to give much trouble.

This disease, properly named the *prickly heat* by the English, generally seizes on strangers soon after their arrival in hot climates. The best method of cure, is to observe temperance, use moderate exercise, and encourage free perspiration, avoiding sudden transitions to cool air, night dews, and damp places.

COUP DE SOLEIL;

OR, STROKE OF THE SUN,

Is a disease, which, from its extreme virulence and rapidity, too generally precludes all relief. Mariners, marines, and soldiers on foreign service, are more immediately exposed to this fatal stroke than other travellers.

It arises from the action of the extreme heat of the sun on the brain in hot climates; to which the men are either exposed on deck, in their duty at mid-day, or when fatigued by labour, or marching on shore exposed to the sun's heat.

The usual symptoms are, violent head-ache and thirst; sometimes it is attended with a difficult breathing; in some it is proceeded by a red bloated face; at one time glossy; at another, swelled sparkling eyes, a giddiness, and other *apoplectic* symptoms, with such other phenomena, as bring on a total abolition of the animal functions; first, those of sense and voluntary motion, and lastly, of the heart and lungs, &c.

A spon-

A spontaneous discharge by stool and urine, accompanied with a bilious vomiting, though usually taken for symptoms of immediate death, frequently afford relief, and give the physician time to exert his best endeavours for the life of the patient.

The rarefaction of the blood from extreme heat, and the difficulty it must meet in this state of expansion, in its circulating through the sinuses in the Encephalon, indicate blood-lettings, and the other evacuations. The accumulated heat of the body, external and internal application of cold. Acids, when at hand, may perhaps best answer this intention ; whether they are applied externally, or thrown in in the form of draughts and clisters.

Stimulating sternutatories and cataplasms follow*.

If the patient becomes breathless under the stroke, the means employed to restore animation in persons drowned, should be resorted to ; substituting the application of acid for salt, and inflating the lungs.

After what has been said, it may be thought unnecessary to add, that the preservation of life

* To procure a sudden and effectual stimulus of all the organs of secretion, or evacuation, a quick repetition of our medicines, in an increased dose, is the most certain effectual method. See page xxx.

depends upon every exertion being instantaneous. From a horizontal posture, change the patient to a sitting, or partly erect one; taking due care that the head does not become pending. Thus placed in the shade, with the free admission of cool air, should all relief be administered, and persevered in.

This disease, so alarming in appearance, so rapid in its progress, and fatal in its effects, should not discourage the young practitioner from doing every thing that can be done, with all reasonable hope of success; and which will generally attend his labours, where none of the vessels of the brain have been ruptured, and relief has been immediately administered.

O M I T T E D.

The Ætherial Anodyne Mixture,

For curing the *Hiccough*, mentioned page 122.

Take of cinnamon, or peppermint water j ℥.

Two tea spoons full of *æther*.

Laudanum xx drops.

To the laudanum and cinnamon water add the *æther*, and immediately give it to the patient. If it does not presently remove the hiccough, it may be repeated at intervals of half an hour, or an hour.

When

When this very troublesome symptom requires, it may be repeated at shorter intervals, reducing the laudanum, and increasing the *æther*, each one half.

Antiscorbutic Ointment; mentioned page 237.

Take ointment of hogs-lard j℥.

White mercury precipitate j℥.

Cantharides in fine powder j℥.

Antiscorbutic powder, No. 1, j℥.

Mix and make into an ointment.

This is a most safe, and very elegant mercurial ointment, and may be successfully employed in the most obstinate cutaneous foulness, blotches, and pimples, not only on the body and limbs, but on the face also. Lightly touching the parts affected every second or third night going to bed.

F I N I S.

A N

EXPLANATORY INDEX

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" Though index'd learning turns no student pale,
 " It holds the eel of science by the tail."

POPE.

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Notes to be added at the bottom of page xxxvi. 248, 363, 374, 378, 478; 417, 286, l. 2; *for which see errata or errors.*

Alterations in the text, p. 215, l. 28; 289, l. 14 and 15; 300, l. 26; 321, l. 13; *for which see errata, or errors.*

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CURE OF DISEASES.

The book of nature is open to every
inquisitive research. Happy
is the physician that is well
read therein.

And thrice happy the patients who
fall to his lot.

Information is liberally dispersed,
throughout (what we may
call) its four volumes: the
vegetable, mineral, animal,
and marine kingdoms.

And abundant materials for the palli-
ation, or cure, of every dis-
ease incident to the animal
body, xiii. xxi.

May be found in these exhaustless
storehouses, to which we
have free access, xiii.

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Two things should be ever present to the young practitioner. The keeping the *bile* in a healthy, sound state, as a genuine medicine of nature's own elaboration, within that system it is destined to preserve, 3

and, to take care, that its proper antagonist in the animal system, *acid*, with which probably, all nature's productions abound, is administered in sufficient quantity, 183, 188, 208, 217, 218, 273, to 276

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E R R A T A,

OR ERRORS, OMISSIONS, AND OBSERVATIONS.

Page Line.

- xi 7 READ *tortured*, for *tutored* ✓
- xv 6 instead of the second part, read of *this treatise*
- xxii the note see *scurvy*, p. read 212
- xxxv 25/ for *queroinus*, read *quercinus*
- xxx 4 after the word *fever*, read *where*
- xxxvi 28 after the word *opium*, by way of note, should be added this observation : If allaying, assuaging, mitigation, and composing, entitle a medicine to the appellation of *sedative*, none can have a better title to it than *opium*. This does not contradict Dr. Home's arrangement; as all sedatives, in a low degree, are stimulants. See p. xxxiii.
- xxxvii 20 for *trifmas*, read *trismus*
- 21 for *conlusio*, read *convulsio*
- xl 14 omit the word *own*
- 18 for *more*, read *mere*
- 19 for *successful*, read *succesfs*
- xl to the note, see *acids*, p. add 182 to 213.
- 2 3 read *volatile* before *alkalies*
- 4 16 for *hopatic*, read *hepatic*
- 7 27 for *preparation*, read *proportion*
- 19 6 after *fourth*, add of a *paper*
- 20 3 after *part*, add of a *paper*
- 22 28 instead of *sonapisms*, read *sinapisms*
- 23 1 for *motives*, read *vomitives*
- 24 8 for *sinopisms*, read *sinapisms*
- 34 and of the note, see page, read 44 to 47
- 35 9 instead of *No.* read *page* 19
- 36 16 for *precordia*, read *præcordiæ*
- 42 6 instead of *it*, read *they*
- 45 18 instead of *them any*, read *the many*
- 50 28 instead of *disputation*, read *disposition*
- 51 15 instead of *distant*, read *distinct*
- instead of *use*, read *cause*

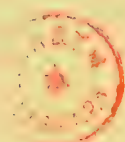
Page.	Line.
53	15 for efforts, read <i>effects</i>
68	20 for better, read <i>bitter</i> ; and for the word their, read <i>its</i>
81	8 for savage, read <i>sauvages</i>
84	14 at the end of this line add, <i>with the addition of syrup of ginger</i>
120	22 for or, read <i>of</i>
118	30 omit the word <i>little</i>
122	11 for barborigmi, read <i>barborigmi</i>
127	16 after essential, read <i>oil</i>
128	25 for anti-acid, read <i>anti-acrid</i>
136	10 after page, read 19, 118, <i>see scurvy and postscript</i>
140	23 for No. read <i>page 127</i>
145	14 for juiap, read <i>julep</i>
148	28 instead of excretary, read <i>excretory</i>
172	20 after see page, add <i>126 and 163</i>
177	22 after four, add <i>six or eight</i>
174	17 for disaltient, read <i>discutient</i>
179	22 for morgogni, read <i>morgagni</i>
180	25 for julap, read <i>julep</i>
181	5 for julap, read <i>julep</i>
204	21 instead of spotting, read <i>spitting</i>
215	28 the two first lines of this sentence should be read thus. <i>The relaxed state of the body from heat, and the great obstruction of perspiration</i>
223	8 instead of animal, read <i>vegetable</i>
227	26 at the end of this line, by way of note, read, <i>a similar observation is made by Atkins in his Navy Surgeon, published in 1734, p. 252</i>
236	15 after the word page, add <i>171</i>
247	20 read by way of note, <i>Chefelden makes it much more</i>
247	5 for perspiration, read <i>respiration</i>
248	26 at the end of this, by way of note, read, <i>Dr. Robinson ascribed similar qualities to the air, in the office of respiration and animal heat: in his treatise on the animal economy, published in Dublin, 1720, and 1730</i>
276	6 for emuctories, read <i>emunctories</i>
280	23 for Bologne, read <i>Bologna</i>
283	6 for the opening outlets on the surface, read, <i>opening the outlets on the surface</i>
285	1 for palatable, read <i>portable</i>
285	22 after oil add, <i>and then with a dry swollen cloth again, until oil gradually disappears</i> after

Page. Line.

- 286 2 after the word pound, add, or refer by way of *note*; the butyraceous part swims on the surface of the water, or whey, and the caseous remains undissolved; the former is to be skimmed, and the latter strained off
- 289 14 & 15 for, and the bad tendency, the defection it excites, read *the bad tendency and defection it excites*
- 295 5 for whilet-bone, read *whirle-bone, patella, or knee-pan*
- 297 21 for Epigraftic, read *Hypogastric*
- 300 26 instead of, must have differences in the degree of strength, read *must have a difference in the degree of strength*
- 304 9 for in, read *is*
19 for drams, read *scruples*
- 307 15 & 16 instead of, but still retaining the power of subtilizing this stream of the blood of life also, read *but still retaining the power of subtilizing this stream of life also*
- 321 13 for j 3, read *jv 3 of quicksilver*
- 322 25 after is equal to, add *a*
20 for five, read *two and a half grains*
- 328 24 after urine, add *stool*
- 317 19 for patent, read *potent*
- 358 18 for muday, read *mid day*
- 363 at the bottom of this page, read by way of *note* to the first paragraph.—Vermin, at all times loathsome and unhealthy, are on board ship peculiarly so, from its close confined crevices, which afford them innumerable receptacles. These are brought on board with vegetables and fruits from the shore, and particularly in the *wood*, which should be floated along side. If brought off in a boat, ought to be kept along side, untill carefully cleansed, or well washed
- 374 by way of *note* to the first paragraph, add to the bottom: *it is frequently contracted by the European sailors in the slave trade*
- 379 16 for vascutories, read *vescutories*
- 378 the note marked †, belongs to *Crakuas*, and not to the *sleepy disease*
- 383 add to the note, *of the last century*
- 389 5 instead of putting, read *poutting*
- 397 22 omit the word *their*
- 417 to the note at the bottom of this page, after the word dysenterics

- teries in the last line, introduce *cholera morbus and bilious fever*
- 418 21 for Mr. Paisly, read *Mr. Paisly*
- 430 4 for mas, read *mas*
- 434 22 for calomel, read *colombo*
- 444 19 & 20 instead of such part of the earth and ocean as forms the atmosphere, or part of the globe, read *such part of the earth and ocean, and atmosphere as forms the part of the globe*
- 465 21 for vol. p. 195, read *vol. 1, p. 195*
- 471 second note, for 36, read *xxxvi.*
- 475 20 for late, read *lastly*
- 453 22 after the word wind, read *hence wind is usually succeeded by rain*
- 478 14 for mas read *mas*
- in addition to the first note of page 478, *ANIMAL GLUTEN is in a concrete state in the bones of animals, and may be extracted by the coction of the shavings or powder of bones, even at sea: or hartshorn shavings may be taken to sea for the purpose, or isinglass*
- 488 10 after the word China, read *and the Philippines to Mexico, and*

F I N I S.



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